LAKE WASHINGTON - ISSAQUAH CHINOOK

This stock was called Issaquah summer/fall chinook in the 1992 SASSI. Run timing designations have been dropped from most Puget Sound chinook stock names because they have been inconsistently applied.

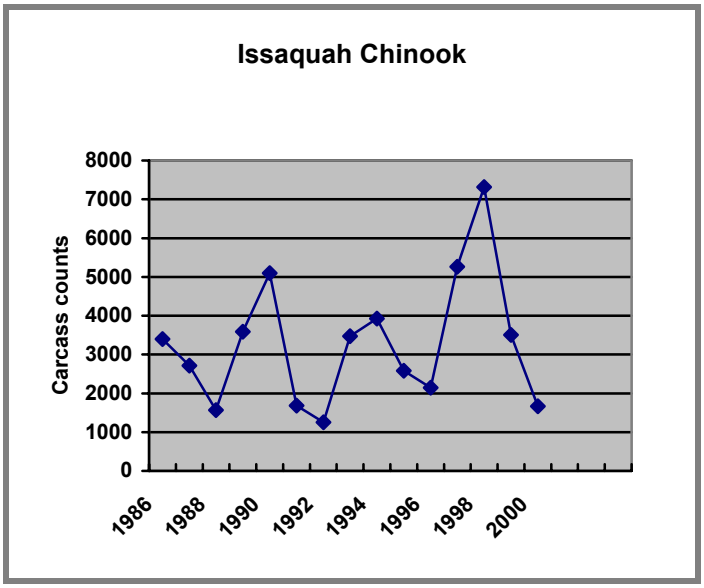
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	CARCASS COUNTS
1986	3,396
1987	2,716
1988	1,567
1989	3,585
1990	5,098
1991	1,684
1992	1,254
1993	3,475
1994	3,923
1995	2,582
1996	2,146
1997	5,265
1998	7,314
1999	3,507
2000	1,668



Data are carcass counts in Issaquah Creek from RM 0.0 to 3.0 and the East Fork Issaquah Creek from RM 0.0 to 3.1.

Spawners in Issaquah Creek are believed to be entirely the result of hatchery production, mostly from Issaquah Hatchery. Many more fish return than are needed at the hatchery, and surplus fish are allowed to spawn naturally. Numbers of naturally spawning chinook have been high and fairly stable, so status is rated **Healthy** in 2002. Historically, this watershed probably did not have a sustainable population of chinook.

STOCK DEFINITION

Issaquah chinook were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning takes place in Issaquah Creek and its East Fork.

SPAWNING TIMING: Spawning generally occurs from late September through October.

LAKE WASHINGTON - ISSAQUAH CHINOOK

GENETIC ANALYSIS: Allozyme analysis of the Issaquah and North Lake Washington Tribs chinook stocks has yielded no strong indication that the two stocks are genetically distinct (Marshall 2000). Microsatellite DNA analysis of essentially the same samples also showed no evidence that the Issaquah and North Lake Washington Tribs populations were significantly different from one another (Young and Shaklee 2000). Both Lake Washington stocks were significantly different from Soos Creek Hatchery (Green River) chinook and from White River (Puyallup) spring chinook sampled at the Hupp Springs Hatchery (Young and Shaklee 2000).

STOCK ORIGIN

This is a **non-native** stock with **composite** production. We believe the stock is derived from the Soos Creek Hatchery chinook stock, in use at Issaquah Hatchery since the 1930s. Other non-local stocks may have also influenced the stock composition, since it is now genetically different from the Soos Creek Hatchery population.

LAKE WASHINGTON – NORTH LAKE WASHINGTON TRIBS CHINOOK

This stock was called North Lake Washington Tribs summer/fall chinook in the 1992 SASSI. Run timing designations have been dropped from most Puget Sound chinook stock names because they have been inconsistently applied.

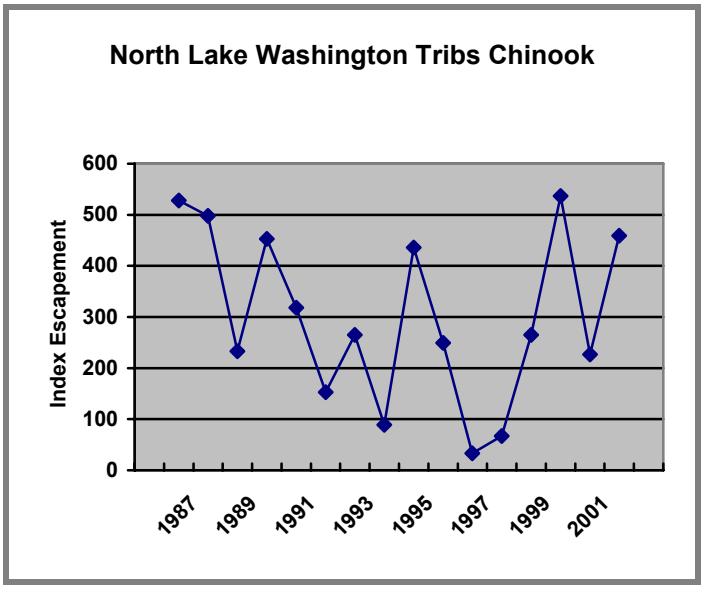
STOCK STATUS

1992 STATUS	2002 STATUS
Unknown	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	INDEX ESCAPEMENT
1986	528
1987	498
1988	233
1989	453
1990	318
1991	153
1992	265
1993	89
1994	436
1995	249
1996	33
1997	67
1998	265
1999	537
2000	227
2001	459



Data are index escapement estimates based on counts of live chinook in Bear Creek (RM 1.3 to 8.8) and in Cottage Lake Creek (RM 0 to 2.3), a Bear Creek tributary. In addition, other portions of the watershed are surveyed annually.

Run sizes fluctuate considerably. This variation is normal for small watersheds such as these. Overall, index abundance has generally been between 200 and 500 adults. These escapements are probably underestimates because of the substantial numbers of chinook observed spawning outside of index areas. Stock status is rated **Healthy** in 2002.

STOCK DEFINITION

North Lake Washington Tribs chinook were identified as a stock based on their distinct spawning distribution.

LAKE WASHINGTON – NORTH LAKE WASHINGTON TRIBS CHINOOK

SPAWNING DISTRIBUTION: Most spawning takes place in North, Swamp, Bear, Little Bear, Thornton, McAleer and Cottage Lake creeks as well as in the Sammamish River.

SPAWNING TIMING: Spawning generally occurs from mid-September through October.

GENETIC ANALYSIS: Allozyme analysis of the Issaquah and North Lake Washington Tribs chinook stocks has yielded no strong indication that the two stocks are genetically distinct (Marshall 2000). Microsatellite DNA analysis of essentially the same samples also showed no evidence that the Issaquah and North Lake Washington Tribs populations were significantly different from one another (Young and Shaklee 2000). Both Lake Washington stocks were significantly different from Soos Creek Hatchery (Green River) chinook and from White River (Puyallup) spring chinook sampled at the Hupp Springs Hatchery (Young and Shaklee 2000).

STOCK ORIGIN

This is a **mixed** stock with **composite** production**.**

LAKE WASHINGTON - CEDAR CHINOOK

This stock was called Cedar summer/fall chinook in the 1992 SASSI. Run timing has been dropped from most Puget Sound chinook stock names because it has been inconsistently applied.

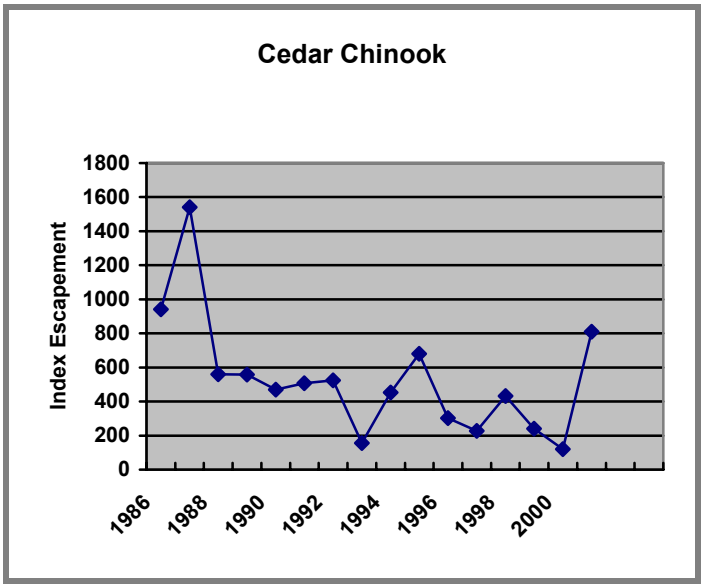
STOCK STATUS

1992 STATUS	2002 STATUS
Unknown	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	INDEX ESCAPEMENT
1986	942
1987	1,540
1988	559
1989	558
1990	469
1991	508
1992	525
1993	156
1994	452
1995	681
1996	303
1997	227
1998	432
1999	241
2000	120
2001	810



Data are index escapement estimates based on live spawner counts in the Cedar River from RM 0.7 to the pipeline at RM 21.3 in most years.

Status is rated **Depressed** in 2002 due to **a long-term negative trend** in escapements and **chronically low** escapement values. Index escapements have declined since the early 1980s with a low of 120 spawners in 2000. The 2001 value showed a sharp increase. However, stock status will remain depressed until a trend at a higher abundance level is evident.

STOCK DEFINITION

Cedar chinook were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning takes place in the mainstem Cedar River. Some spawning also occurs in Taylor Creek, and spawning may occur in Rock Creek when flows are adequate.

LAKE WASHINGTON - CEDAR CHINOOK

SPAWNING TIMING: Spawning generally occurs from mid-September to early November.

GENETIC ANALYSIS: Allozyme analysis has shown that Cedar chinook are significantly different from the Issaquah and North Lake Washington Tribs stocks (Marshall 2000).

STOCK ORIGIN

This is a **native** stock with **wild** production.

LAKE WASHINGTON – LAKE WASHINGTON/ SAMMAMISH TRIBS COHO

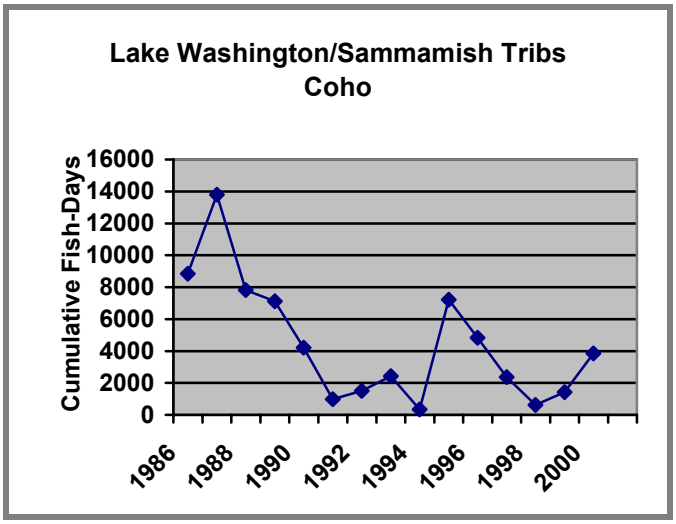
STOCK STATUS

1992 STATUS	2002 STATUS
Depressed	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	CUMULATIVE FISH-DAYS
1986	8,850
1987	13,804
1988	7,817
1989	7,118
1990	4,210
1991	978
1992	1,505
1993	2,421
1994	339
1995	7,225
1996	4,832
1997	2,375
1998	630
1999	1,414
2000	3,852



Data are sums of cumulative fish-days for Lake Washington and Sammamish coho survey indices.

Index values have continued to be at levels far below those observed in the 1980s. In 2002 the stock is again rated **Depressed**, due to a **long-term negative trend** in escapements and **chronically low** escapements.

STOCK DEFINITION

Lake Washington/Sammamish Tribs coho were identified as stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Spawning takes place throughout the east and northwest tributaries of Lake Washington, in Sammamish River tributaries, in Lake Sammamish tributaries and in Issaquah Creek and its tributaries.

SPAWNING TIMING: Spawning generally occurs from late October to mid-December.

GENETIC ANALYSIS: No genetic analysis has been done on Lake Washington/Sammamish Tribs coho.

LAKE WASHINGTON – LAKE WASHINGTON/ SAMMAMISH TRIBS COHO

Stock Origin

This is a **mixed** stock with **composite** production. Various non-native hatchery-origin coho stocks were released into Issaquah Creek between the early 1950s and the early 1970s. Some have probably been incorporated into the Issaquah Hatchery broodstock, the hatchery component of the stock.

LAKE WASHINGTON – CEDAR COHO

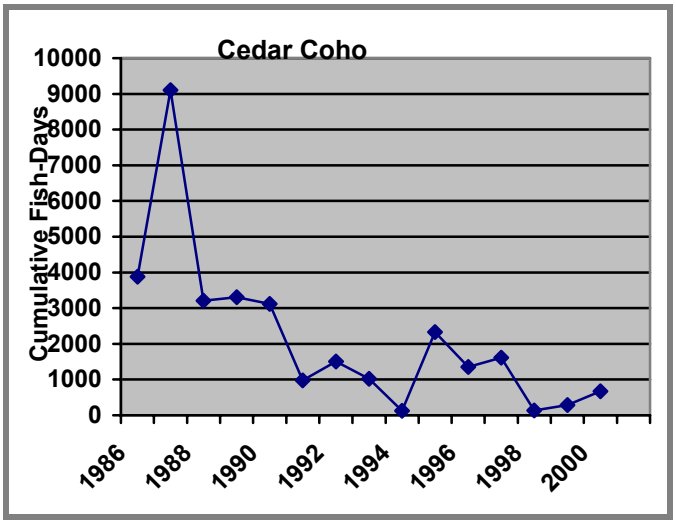
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	CUMULATIVE FISH-DAYS
1986	3,879
1987	9,104
1988	3,210
1989	3,304
1990	3,122
1991	978
1992	1,504
1993	1,022
1994	128
1995	2,333
1996	1,355
1997	1,612
1998	132
1999	291
2000	672



Data are cumulative fish-days for the Rock Creek and Downs Creek index areas.

Index escapement values in the 1990s have declined to levels far below those observed in the 1980s, so the stock is now rated **Depressed**, due to both the **long-term negative trend** in the index values and the **chronically low** nature of the indicator values.

STOCK DEFINITION

Cedar coho were identified as stock due to their distinct spawning distribution and prolonged spawning timing within the Lake Washington watershed.

SPAWNING DISTRIBUTION: Spawning takes place in the Cedar mainstem and accessible tributaries up to the Landsburg Dam.

SPAWNING TIMING: Spawning generally occurs from late October to early March.

GENETIC ANALYSIS: No genetic analysis has been done on Cedar coho.

LAKE WASHINGTON – CEDAR COHO

Stock Origin

This is a **mixed** stock with **wild** production. Various non-native hatchery-origin coho were released into the Cedar drainage between 1952 and 1970.

LAKE WASHINGTON – LAKE WASHINGTON/SAMMAMISH TRIBS SOCKEYE

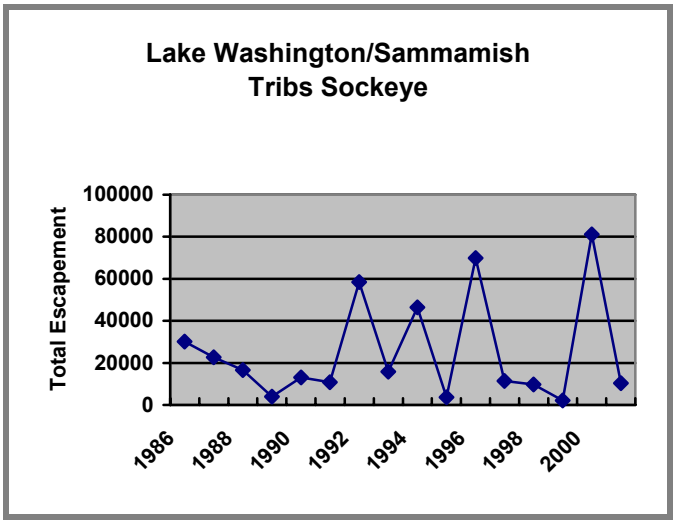
STOCK STATUS

1992 STATUS	2002 STATUS
Depressed	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	30,128
1987	22,688
1988	16,546
1989	3,882
1990	13,025
1991	10,747
1992	58,449
1993	15,819
1994	46,375
1995	3,596
1996	69,913
1997	11,428
1998	9,784
1999	2,080
2000	81,090
2001	10,400



Data are total escapement estimates for Big Bear Creek based on live spawner counts. The Lake Washington/Sammamish Tribs sockeye salmon stock has been rated **Healthy** due to strong escapement values since 1992, with extraordinary escapements exceeding 50,000 spawners in a four-year cycle (1996-2000). Along with the increased escapement levels, the stock is now displaying a pattern of alternating high and low annual returns.

STOCK DEFINITION

Lake Washington/Sammamish Tribs sockeye were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning takes place in the Big Bear Creek system and Issaquah Creek. Some spawning also occurs in Little Bear Creek.

SPAWNING TIMING: Spawning generally occurs from September through December.

GENETIC ANALYSIS: Allozyme analysis has shown that Lake Washington/Sammamish Tribs sockeye are genetically distinct from the other Lake Washington sockeye stocks. Hendry (1995) suggested that sockeye spawning in Bear Creek may be native to Lake Washington. However, sockeye spawning in Issaquah Creek are similar to Baker River sockeye (Hendry 1995 and Shaklee et al. 1996). More recent

microsatellite DNA analysis suggests that all Lake Washington sockeye stocks are, at least in part, descendants of introduced Baker sockeye (Spies 2002). Some early introductions of Baker sockeye were spawned at Issaquah Hatchery.

Stock Origin

This is a stock of **unknown** origin with **wild** production. Recent genetic analysis (Spies 2002) suggests that Lake Washington/Sammamish Tribs sockeye are derived in part from introduced Baker sockeye.

LAKE WASHINGTON – LAKE WASHINGTON BEACH SPAWNING SOCKEYE

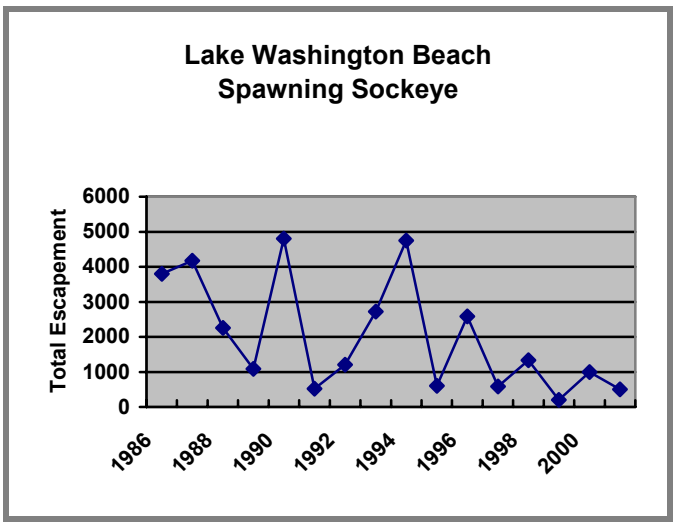
STOCK STATUS

1992 STATUS	2002 STATUS
Depressed	Depressed

STOCK STATUS RATING DATA

DATA QUALITY: Good

YEAR	TOTAL ESCAPEMENT
1986	3,800
1987	4,170
1988	2,260
1989	1,090
1990	4,800
1991	520
1992	1,210
1993	2,720
1994	4,750
1995	600
1996	2,580
1997	580
1998	1,330
1999	200
2000	1,000
2001	500



Data are total escapement estimates based on counts of live plus dead sockeye along the north shore of Mercer Island and portions of the east shore of Lake Washington (Shore Mile (SM) 34.3 - 34.7, SM 36.0 –37.0, and SM 39.0 –39.6).

The Lake Washington Beach Spawning sockeye salmon stock is rated **Depressed** in 2002 due to a **long-term negative trend** in escapement estimates.

STOCK DEFINITION

Lake Washington Beach Spawning sockeye were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Spawning takes place in Lake Washington wherever suitable gravel beaches with upwelling are available, particularly along the north shore of Mercer Island and the east shore of Lake Washington.

SPAWNING TIMING: Spawning generally occurs from October through December.

GENETIC ANALYSIS: Genetic analysis has shown Lake Washington Beach Spawning sockeye to be genetically similar to the introduced Baker River stock (Hendry 1995). More recent microsatellite DNA

analysis also suggests that these fish, and all other Lake Washington sockeye may be, at least in part, descendants of introduced Baker sockeye (Spies 2002).

Stock Origin

This is a **non-native** stock with **wild** production. This stock was introduced from the Baker River.

LAKE WASHINGTON – CEDAR SOCKEYE

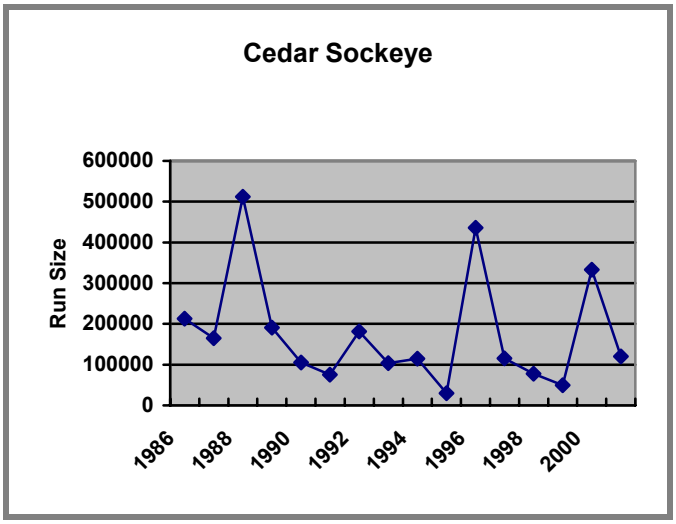
STOCK STATUS

1992 STATUS	2002 STATUS
Depressed	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	RUN SIZE
1986	212,985
1987	165,200
1988	512,257
1989	190,482
1990	105,139
1991	75,327
1992	181,670
1993	103,876
1994	114,942
1995	30,084
1996	435,843
1997	115,789
1998	77,906
1999	49,661
2000	332,886
2001	120,000



Data are run-size values based on Ballard Locks adult counts minus the escapement totals for non-Cedar stocks (Lake Washington/Sammamish and Lake Washington Beach Spawning sockeye stocks). These run-size values best represent the status of Cedar River sockeye salmon. Due to changes in migration patterns, recent escapement estimates for Cedar River sockeye are likely under-estimates and are not useful for rating stock status.

Stock status is rated **Depressed** in 2002 due to **chronically low** escapement values. The escapement goal for this stock is 350,000 spawners.

STOCK DEFINITION

Cedar sockeye were identified as a stock based on their distinct spawning distribution and genetic composition.

SPAWNING DISTRIBUTION: Spawning takes place throughout the mainstem Cedar River up to the pipeline at RM 21.3 and in the lower portions of Grass Creek.

LAKE WASHINGTON – CEDAR SOCKEYE

SPAWNING TIMING: Spawning generally occurs from September through January.

GENETIC ANALYSIS: Allozyme analysis has shown Cedar sockeye to be significantly different from other Washington sockeye stocks examined but similar to Baker sockeye (Hendry 1995). More recent microsatellite DNA analysis also showed that Cedar sockeye are similar to Baker sockeye and suggests that these fish, and all other Lake Washington sockeye are, at least in part, descendants of introduced Baker sockeye (Spies 2002).

STOCK ORIGIN

This is a **non-native** stock with **composite** production. These fish were introduced into the Cedar River in the 1930s through fry plants of Baker River sockeye. Presently there is an expanding hatchery mitigation program at Landsburg where a City of Seattle pipeline restricts upstream passage. Currently the target of the program is to release about 18 million sockeye fry into the Cedar River.

LAKE WASHINGTON– LAKE WASHINGTON WINTER STEELHEAD

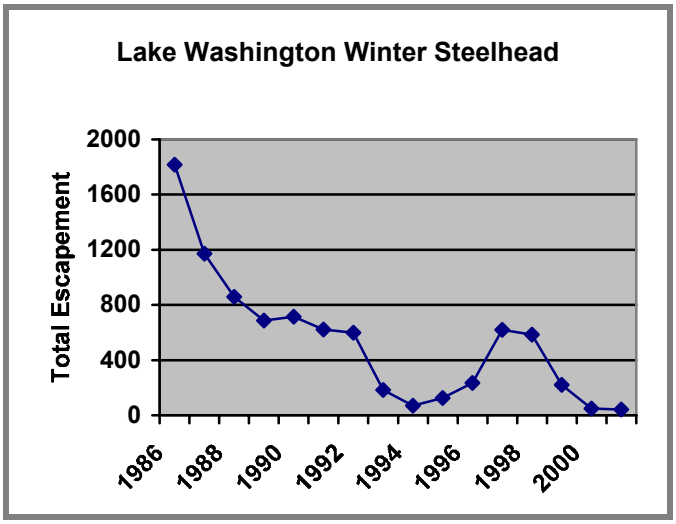
STOCK STATUS

1992 STATUS	2002 STATUS
Depressed	Critical

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Excellent

YEAR	TOTAL ESCAPEMENT
1986	1,816
1987	1,172
1988	858
1989	686
1990	714
1991	621
1992	599
1993	184
1994	70
1995	126
1996	234
1997	620
1998	584
1999	220
2000	48
2001	42



Data are total escapement estimates based on redd counts in the Cedar River and in Issaquah and Bear Creeks.

The escapement goal for Lake Washington winter steelhead is 1,600 fish. Stock status has been changed from depressed to **Critical** due to **chronically low** escapements and a **short-term severe decline** in escapement in 2000 and 2001.

STOCK DEFINITION

Lake Washington winter steelhead were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Spawning takes place throughout the Lake Washington basin including the Sammamish River and its tributaries, Issaquah Creek, Coal Creek, May Creek, the lower Cedar River and several smaller Lake Washington tributaries.

SPAWNING TIMING: Spawning generally occurs from mid-December through early June.

LAKE WASHINGTON– LAKE WASHINGTON WINTER STEELHEAD

GENETIC ANALYSIS: Allozyme analysis of steelhead sampled in the Cedar River in 1994 clusters them with winters steelhead in the Green, White and Puyallup rivers and with some Snohomish basin steelhead stocks (Phelps et al. 1997).

STOCK ORIGIN

This is a **native** stock with **wild** production.

DUWAMISH/GREEN - GREEN RIVER (DUWAMISH) CHINOOK

This stock combines the Green River and Newaukum Creek chinook stocks, which were treated separately in the 1992 SASSI. Genetic analysis indicates that there is no significant difference between these two populations.

STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	4,792
1987	10,338
1988	7,994
1989	11,512
1990	7,035
1991	10,548
1992	5,267
1993	2,476
1994	4,078
1995	7,939
1996	6,026
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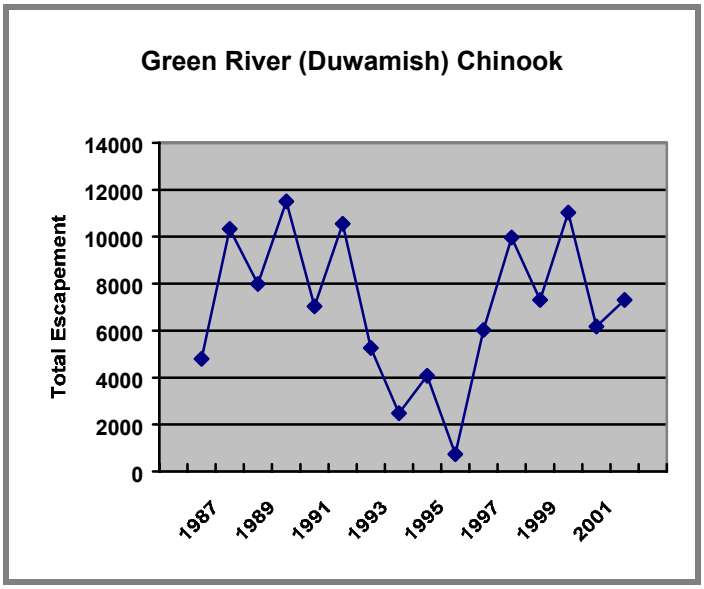
1998	7,312
1999	11,025
2000	6,170
2001	7,975



Data are total escapement estimates based on redd counts in the mainstem Green River from RM 35.0 to 41.5 and from RM 41.5 to 43.0, and in Newaukum Creek from RM 0.0 to 3.9.

Stock status is rated **Healthy** in 2002 because escapements have been strong with no clear negative trend. Hatchery strays contribute heavily to natural chinook spawning in the Green River drainage.

STOCK DEFINITION

Green River (Duwamish) chinook were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning generally takes place in the mainstem Green River from RM 23 to 61.2 and in the lower six miles of Newaukum and Soos creeks.

SPAWNING TIMING: Spawning generally occurs from mid-September to early November.

DUWAMISH/GREEN - GREEN RIVER (DUWAMISH) CHINOOK

Genetic Analysis: Allozyme analysis has shown no significant difference between Newaukum Creek natural spawners and Soos Creek hatchery chinook. Green River mainstem natural spawners have not been analyzed. Soos Creek Hatchery chinook were also not significantly different from Issaquah Hatchery chinook, Skykomish Hatchery fall chinook or Marblemount Hatchery summer/fall chinook (Marshall et al. 1995, Marshall 2000).

Stock Origin

This stock is a **native** stock with **composite** production. Broodstock for the original Soos Creek hatchery chinook program in this watershed came from native Green River adults either captured on the river or diverted into Soos Creek by a weir placed across the river near the mouth of the creek in the early 1900s. Eggs from out-of-basin hatcheries have occasionally been imported to supplement eggs takes at Soos Creek, but the hatchery stock has remained, to a very large extent, a local Soos Creek stock. There is a significant amount of genetic interchange between wild and hatchery-origin chinook that return to the hatchery rack and are spawned each year, and conversely, between stray hatchery adults and wild fish that intermingle on spawning grounds within the basin.

DUWAMISH/GREEN – DUWAMISH/GREEN FALL CHUM

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Duwamish/Green fall chum, so their status is **Unknown** in 2002.

Stock Definition

Duwamish/Green fall chum were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Spawning takes place in the mainstem and side channels of Green River.

Spawning Timing: Spawning generally occurs from late November through December.

Genetic Analysis: No genetic analysis has been done on Duwamish/Green fall chum.

Stock Origin

This is a **mixed** stock with **composite** production. Hatchery plants from the Keta Creek Hatchery have occurred in this area, and it is likely that these have affected the native stock gene pool.

DUWAMISH/GREEN – CRISP CREEK FALL CHUM

Stock Status

1992 Status	2002 Status
Healthy	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Crisp Creek fall chum, so their status is **Unknown** in 2002. Chum salmon spawners in Crisp Creek are a part of the hatchery population supported by the Muckleshoot Tribe's Keta Creek Hatchery. The hatchery program is very successful, and all indications are that large numbers of chum salmon annually spawn in Crisp Creek downstream of the hatchery rack. However, there are no actual counts of spawners that can be used to rate stock status.

Stock Definition

Crisp Creek fall chum were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Spawning takes place in Crisp Creek.

Spawning Timing: Spawning generally occurs from late November through December.

Genetic Analysis: Allozyme analysis has shown that Crisp Creek fall chum sampled in 1994 are not significantly different from Quilcene Hatchery chum, from which they were derived (Phelps et al. 1995). Results of more recent analyses are not yet available.

Stock Origin

This is a **non-native** stock with **composite** production. Keta Creek Hatchery chum originated from releases of Quilcene and Hoodsport hatchery stock. Surplus hatchery fish spawn in Crisp Creek and may also mix with mainstem native spawners. In 1990 efforts were initiated to replace this stock with a South Puget Sound stock from the Suquamish Tribal hatchery.

DUWAMISH/GREEN – GREEN RIVER/SOOS CREEK COHO

This stock combines the Green River/Soos Creek and Newaukum Creek coho stocks, which were treated separately in the 1992 SASSI.

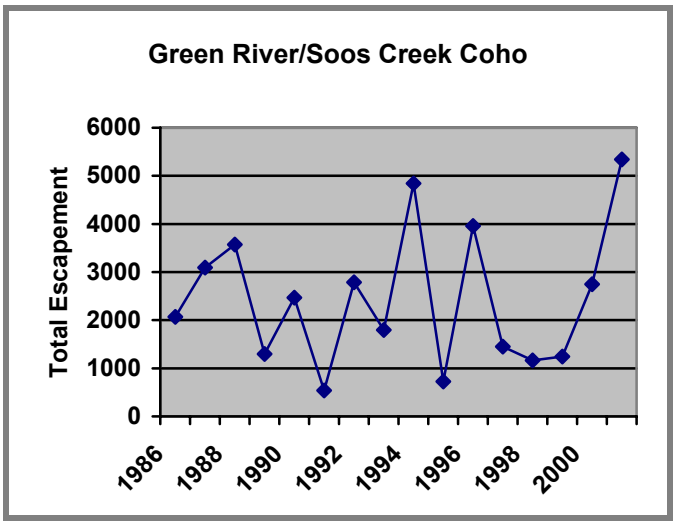
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	TOTAL ESCAPEMENT
1986	2,071
1987	3,092
1998	3,575
1989	1,297
1990	2,466
1991	542
1992	2,784
1993	1,798
1994	4,842
1995	7,228
1996	3,959
1997	1,451
1998	1,161
1999	1,245
2000	2,745
2001	5,340



Data are total escapements based on the sums of cumulative adult fish-days values for Hill, Newaukum, Spring, Cress, and North Fork Newaukum creeks indices.

Escapement estimates since 1992 have been within the range of variation observed for most of the database period, so the stock is again rated **Healthy** in 2002.

STOCK DEFINITION

Green River/Soos Creek coho were identified as a stock due to their distinct spawning distribution.

SPAWNING DISTRIBUTION: Spawning takes place throughout the mainstem Green River and its accessible tributaries.

SPAWNING TIMING: Spawning generally occurs from late October to mid-December.

DUWAMISH/GREEN – GREEN RIVER/SOOS CREEK COHO

GENETIC ANALYSIS: Allozyme analysis of a large sample of Soos Creek Hatchery coho taken in the mid-1990s shows that these fish are significantly different from all other Washington coho stocks examined. They most closely resemble the Lewis Creek (Snohomish basin) coho sample and are very dissimilar to Minter Creek Hatchery coho, another South Sound coho hatchery stock (David Teel, NMFS, personal communication).

STOCK ORIGIN

This is a **mixed** stock with **composite** production. Large numbers of hatchery-reared coho have been released into the Green River system since the early 1900s. The original source of hatchery broodstock was adults captured on the Green River and Soos Creek. Although various out-of-basin eggs have occasionally been imported to supplement egg takes at the Soos Creek hatchery, the hatchery stock has remained, to a very large extent, a local Soos Creek broodstock. Soos Creek, Puyallup and Issaquah hatchery-origin coho stocks have been released into Newaukum Creek.

DUWAMISH/GREEN – GREEN RIVER (DUWAMISH) SUMMER STEELHEAD

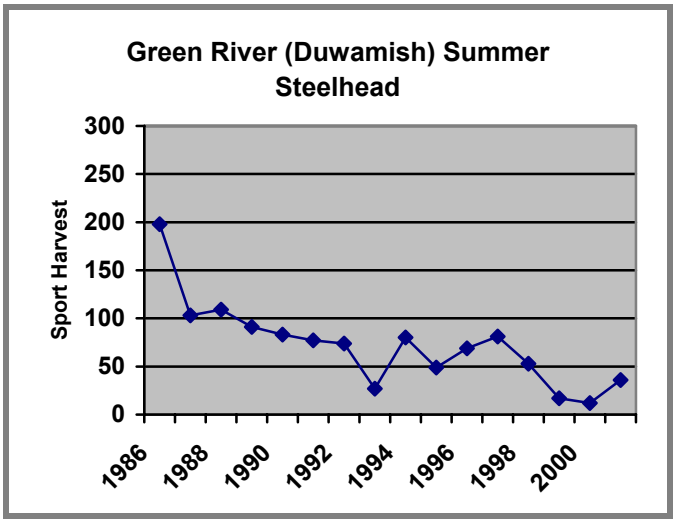
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING DATA QUALITY: Poor

YEAR	SPORT HARVEST
1986	198
1987	103
1988	109
1989	91
1990	83
1991	77
1992	74
1993	27
1994	80
1995	49
1996	69
1997	81
1998	53
1999	17
2000	12
2001	36



Data are sport harvests of unmarked (wild) summer steelhead from the Green River.

Status in 2000 is **Depressed** based on a **long-term negative trend** and **short-term severe decline** in 1999 and 2000 in harvest.

STOCK DEFINITION

Green River summer steelhead were identified as a stock based on their distinct spawning distribution and early river entry timing.

SPAWNING DISTRIBUTION: Spawning is assumed to occur in the Green River below the Tacoma Water Diversion Dam, and in larger tributaries such as Soos and Newaukum creeks.

SPAWNING TIMING: Spawn timing of natural spawners is unknown but is assumed to be similar to that of hatchery-origin adults in the system, generally from mid-January through mid-March.

GENETIC ANALYSIS: No genetic analysis has been done on Green River summer steelhead.

DUWAMISH/GREEN – GREEN RIVER (DUWAMISH) SUMMER STEELHEAD

Stock Origin

This is a **non-native** stock with **composite** production. Skamania Hatchery-origin (lower Columbia River basin) smolts were first released into the Green River in 1965. Prior to hatchery introductions, there is no evidence that summer steelhead were present in this system. This stock is presumed to have arisen from uncaught hatchery-origin adults that spawn, with limited success, in the system.

DUWAMISH/GREEN – GREEN RIVER (DUWAMISH) WINTER STEELHEAD

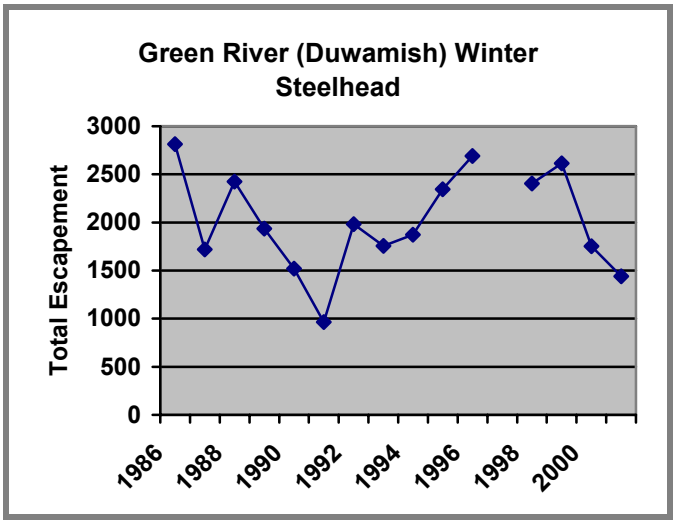
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Excellent

Year	Total Escapement
1986	2,814
1987	1,719
1988	2,425
1989	1,936
1990	1,521
1991	963
1992	1,983
1993	1,757
1994	1,872
1995	2,346
1996	2,691
1997	No data
1998	2,403
1999	2,614
2000	1,754
2001	1,440



Data are total escapement estimates based on cumulative redd counts in all mainstem spawning areas and in index reaches in Soos and Newaukum creeks totaling 12 miles.

Stock status is rated **Healthy** in 2002 because spawner escapements have generally varied within a range of 25% above or below the escapement goal of 2,000 wild spawners.

Stock Definition

Green River winter steelhead were identified as a stock based on their distinct spawning distribution and later river-entry timing and spawning timing.

Spawning Distribution: Most spawning takes place in the Green River from RM 25 to 61, in Newaukum Creek to about RM 12, and in Soos Creek and several of its larger tributaries, including Covington, Jenkins and Lower Soosette creeks.

Spawning Timing: Spawning generally occurs from early March through mid-June.

DUWAMISH/GREEN – GREEN RIVER (DUWAMISH) WINTER STEELHEAD

GENETIC ANALYSIS: Allozyme analysis of Green River winter chinook clusters them with winter steelhead from the Cedar, White and Puyallup rivers and with some Snohomish basin steelhead (Phelps et al. 1997).

STOCK ORIGIN

This is a **native** stock with **wild** production. The hatchery winter steelhead program on the Green River utilizes Chambers Creek Hatchery-origin fish. Adult broodstock is trapped at the Palmer Rearing Ponds on the Green River and at out-of-basin hatcheries. Because hatchery-origin adults return to the river and spawn earlier than the native stock, we believe that there has been very little genetic exchange between the hatchery and wild stocks.

PUYALLUP – WHITE RIVER (PUYALLUP) SPRING CHINOOK

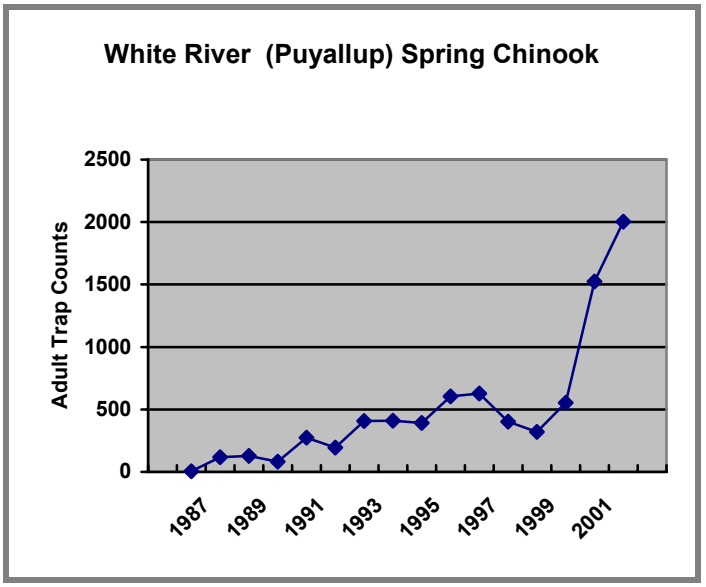
Stock Status

1992 Status	2002 Status
Critical	Critical

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Adult Trap Counts
1986	6
1987	117
1988	127
1989	83
1990	275
1991	194
1992	406
1993	409
1994	392
1995	605
1996	628
1997	402
1998	320
1999	553
2000	1,523
2001	2,002



Data are counts of adult chinook spawners at the U.S. Army Corps of Engineers adult trap on the White River (RM 24.3) near the town of Buckley. Chinook with adipose fin clips and/or coded wire tags indicating hatchery origin are excluded from these counts. Surplus White River spring chinook juveniles at the Muckleshoot Tribe's White River Hatchery and the WDFW Hupp Springs Hatchery are released into the White River from acclimation ponds in the upper watershed, above Mud Mountain Dam. These juveniles are marked with left or right ventral fin clips. Adult chinook with ventral fin clips are included in the counts of White River spring chinook at the Buckley trap.

There is no evidence that the population has re-established itself naturally or achieved self-sustainability. There is evidence that as many as 30% of the chinook captured at the trap are fall chinook and not White River spring chinook (Shaklee and Young, in review). Stock status remains **Critical** in 2002 due to **chronically low** escapement values and questions about the origin of chinook returning to the White River and the sustainability of the increased escapements.

Stock Definition

White River spring chinook were identified as a stock based on their early river entry (beginning in April), spawning timing and genetic composition.

PUYALLUP – WHITE RIVER (PUYALLUP) SPRING CHINOOK

Spawning Distribution: Spawning takes place in the mainstem White River, West Fork White River, in the lower reaches of the Clearwater and Greenwater rivers and in lower Huckleberry Creek. Spawning historically took place above Mud Mountain Dam.

Spawning Timing: Spawning generally occurs in late August through September.

Genetic Analysis: Allozyme and DNA analyses have shown White River spring chinook to be genetically distinct from all other Washington chinook stocks (Marshall et al. 1995). Recent microsatellite DNA analysis indicates that fall chinook are intermingled with spring chinook at the Buckley trap (Shaklee and Young in review).

Stock Origin

This stock is a **native** stock with **composite** production. A captive broodstock program was initiated in the 1970s but has since been discontinued. In addition to natural production, the stock is now propagated at the WDFW Hupp Springs Hatchery on the Kitsap Peninsula and at the Muckleshoot Tribe's White River Hatchery. Any juveniles in excess of hatchery program needs are released from acclimation ponds in the upper White River above Mud Mountain Dam to supplement the naturally spawning component of the stock.

PUYALLUP – WHITE RIVER (PUYALLUP) FALL CHINOOK

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

Recent-year spawning information suggests that White River fall chinook have increased in abundance. However, there has been no estimate of total escapement. Fish are counted at the U.S. Army Corps of Engineers adult trap on the White River near Buckley (RM 24.3), but fish spawning below the dam are not surveyed, therefore stock status is rated **Unknown** in 2002.

Stock Definition

White River fall chinook were identified as a stock based on their later river entry timing and spawning timing.

Spawning Distribution: Exact spawning locations are unknown.

Spawning Timing: Spawning generally occurs in September through early October, later than for the spring chinook stock.

Genetic Analysis: DNA analysis has shown White River fall chinook to be genetically distinct from the White River spring chinook stock. They are similar to other south Puget Sound fall chinook stocks (Shaklee and Young, in review).

Stock Origin

This stock is of **unknown** origin with **composite** production. Unmarked South Sound hatchery-origin fall chinook are undoubtedly passed into the upper watershed above the dams, as demonstrated by mark and tag recoveries at both the Corps of Engineers and White River Hatchery traps, so production type is composite.

PUYALLUP – PUYALLUP CHINOOK

This stock was called Puyallup fall chinook in the 1992 SASSI. Run timing designations have been dropped from most Puget Sound chinook stock names because they have been inconsistently applied.

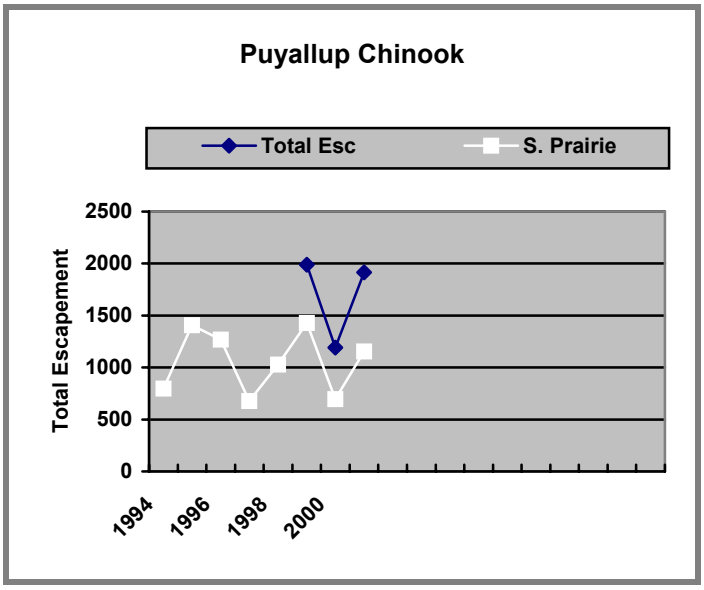
STOCK STATUS

1992 STATUS	2002 STATUS
Unknown	Unknown

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Poor (Total)
Poor (S. Prairie)

YEAR	TOTAL ESCAPEMENT	SOUTH PRAIRIE ESCAPEMENT
1994		798
1995		1,408
1996		1,268
1997		677
1998		1,028
1999	1,988	1,430
2000	1,193	695
2001	1,915	1,154



Data are: 1) total escapement estimates based on a new escapement estimation methodology developed in 1999. This method expands cumulative redd counts from a variety of index reaches throughout the Puyallup River basin; 2) escapement estimates for the South Prairie Creek system based on redd counts. The 1999 through 2001 total escapement estimates are not comparable to earlier estimates. The South Prairie Creek estimates include escapements to Wilkeson Creek in years when flows are sufficient for chinook to spawn there. In low-flow years, chinook cannot spawn in Wilkeson Creek, and all spawning is in South Prairie Creek.

We do not yet know how to relate South Prairie Creek system estimates to Puyallup basin total escapement estimates, so we do not know how well the South Prairie Creek estimates reflect the status of the entire basin. Until there are adequate data to adjust prior escapement estimates and define a longer-term trend, stock status is rated **Unknown**.

STOCK DEFINITION

Puyallup chinook were identified as a stock based on their distinct spawning distribution.

PUYALLUP – PUYALLUP CHINOOK

Spawning Distribution: Spawning takes place in the mainstem Puyallup River, South Prairie Creek, Carbon River and various smaller tributaries.

Spawning Timing: Spawning generally occurs from mid-September to early November.

Genetic Analysis: Allozyme analysis of 1992 and 1993 South Prairie Creek naturally-spawning chinook showed that they are similar to Green River chinook and their hatchery derivatives including Hood Canal, Puyallup, Deschutes, Skykomish and Issaquah hatchery chinook (Marshall et al. 1995).

Stock Origin

This is a stock of **mixed** origin with **composite** production. There were extensive releases of non-native hatchery chinook stocks including stocks from Hood Canal, Deschutes, Minter Creek and Green River from 1973 to1988.

PUYALLUP – HYLEBOS CREEK FALL CHUM

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Hylebos Creek summer chum, so their status remains Unknown in 2002. Chum salmon are occasionally observed in Hylebos Creek during surveys conducted for other species. The numbers of chum seen are so low that they may or may not represent a self-sustaining stock, but could be strays from other stocks.

Stock Definition

Hylebos Creek fall chum were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Most spawning takes place in Hylebos Creek up to RM 5.

Spawning Timing: Spawning generally occurs from late November through early January.

Genetic Analysis: No genetic analysis has been done on Hylebos Creek fall chum.

Stock Origin

Stock origin and production type are **unknown** for this stock.

PUYALLUP – PUYALLUP/CARBON FALL CHUM

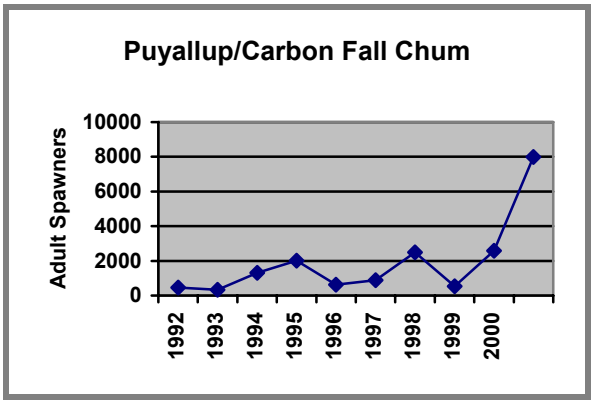
Stock Status

1992 Status	2002 Status
Unknown	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Fair

Year	Adult Spawners
1992	455
1993	337
1994	1,305
1995	2,007
1996	630
1997	885
1998	2,485
1999	543
2000	2,575
2001	7,987



Data are counts of adult spawners from South Prairie Creek. These counts underestimate the total number of chum spawners in Puyallup/Carbon system, however they are useful for identifying a trend in spawner abundance.

These numbers are fairly stable and large. Stock status is rated **Healthy** in 2002.

Stock Definition

Puyallup/Carbon fall chum were identified as a stock based on their distinct spawning distribution and genetic composition.

Spawning Distribution: Most spawning takes place in the mainstem Carbon River and South Prairie Creek. Spawning also occurs in the tributaries of the Puyallup and White Rivers such as Swan Creek.

Spawning Timing: Spawning generally occurs from December through January.

Genetic Analysis: Allozyme analysis has shown Puyallup/Carbon fall chum to be genetically distinct from all other Washington chum and Canadian chum stocks examined (Phelps et al. 1995).

Stock Origin

This is a **native** stock with **wild** production.

PUYALLUP – FENNEL CREEK FALL CHUM

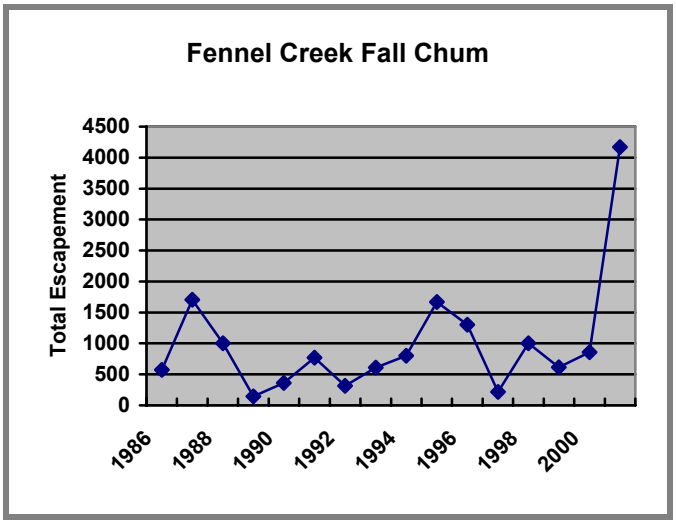
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	573
1987	1,703
1988	1,002
1989	146
1990	362
1991	769
1992	317
1993	609
1994	800
1995	1,668
1996	1,302
1997	217
1998	1,002
1999	614
2000	856
2001	4,168



Data are total escapement estimates based on serial index area counts of adult spawners in Fennel Creek (RM 0.0 – 1.9), and Canyonfalls Creek (RM 0.3 to 0.6).

The status of Fennel Creek fall chum is rated **Healthy** in 2002. The escapements for this stock have been strong since the early-1980s with extraordinary escapements in excess of 1,600 spawners in 1980, 1987 and 1995.

STOCK DEFINITION

Fennel Creek fall chum were identified as a stock based on their distinct spawning distribution and genetic composition.

SPAWNING DISTRIBUTION: Most spawning takes place in the mainstem Puyallup River between the Carbon and White rivers and in tributaries such as Fennel and Canyonfalls creeks.

SPAWNING TIMING: Spawning generally occurs from mid-December through early January.

GENETIC ANALYSIS: Allozyme analysis has shown that Fennel Creek fall chum are different from the Hood Canal stock used in a discontinued egg box program on Fennel Creek (Phelps et al. 1995).

PUYALLUP – FENNEL CREEK FALL CHUM

Stock Origin

This is a stock of **unknown** origin with **wild** production. Prior to the introduction of hatchery fish from Hood Canal, the native escapement was less than 200 spawners. Escapement levels increased as a result of the egg box project, which has been discontinued. The stock is now sustained entirely by wild production.

PUYALLUP – PUYALLUP COHO

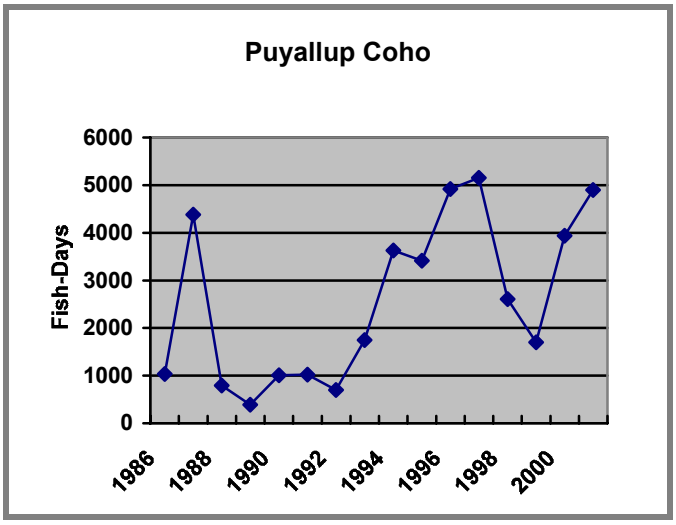
STOCK STATUS

1992 STATUS	2002 STATUS
Depressed	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	FISH-DAYS
1986	1,037
1987	4,381
1988	790
1989	391
1990	1,011
1991	1,020
1992	702
1993	1,746
1994	3,629
1995	3,413
1996	4,916
1997	5,153
1998	2,608
1999	1,703
2000	3,936
2001	4,899



Data are cumulative fish-days values for index areas in Fennel Creek (RM 0.0 –1.9), Canyonfalls Creek (RM 0.3 – 0.6), unnamed stream 10.0453 (RM 0.0 –0.2), unnamed stream 10.0420A (RM 0.0 – 0.4) and Fiske Creek (RM 0.3 – 1.1).

Escapement values for 1992 to present have been considerably higher than earlier values, so stock status is rated **Healthy** in 2002.

STOCK DEFINITION

Puyallup coho were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Spawning takes place throughout the mainstem Puyallup River, South Prairie Creek and Carbon River and their tributaries.

SPAWNING TIMING: Spawning generally occurs from mid-October through January, with occasional spawning as late as March in South Prairie Creek and its tributaries.

GENETIC ANALYSIS: No genetic analysis has been done on Puyallup coho.

PUYALLUP – PUYALLUP COHO

Stock Origin

This is a **mixed** stock with **composite** production. The annual contribution of hatchery-origin fish (judged by the presence of marks or tags) to the natural spawning population ranges from 12 to 25%.

PUYALLUP – WHITE RIVER (PUYALLUP) COHO

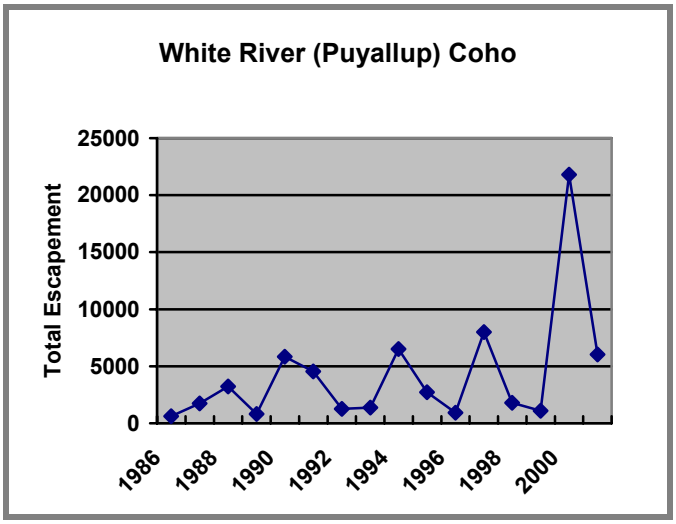
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Very Good

YEAR	TOTAL ESCAPEMENT
1986	616
1987	1,746
1988	3,231
1989	820
1990	5,840
1991	4,548
1992	1,264
1993	1,379
1994	6,497
1995	2,733
1996	927
1997	8,000
1998	1,800
1999	1,100
2000	21,800
2001	6,022



Data are total coho adults trapped at the U.S. Army Corps of Engineers adult trap on the White River near Buckley (RM 24.3).

The stock is again rated **Healthy** in 2002, because escapement values are at or considerably above the values observed prior to 1992 and the number of spawners is fairly robust.

STOCK DEFINITION

White River coho were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning takes place in the White River, West Fork White, Clearwater and Greenwater rivers.

SPAWNING TIMING: Spawning generally occurs from mid-September through mid-December.

GENETIC ANALYSIS: No genetic analysis has been done on White River coho.

PUYALLUP – WHITE RIVER (PUYALLUP) COHO

Stock Origin

This is a **mixed** stock with **composite** production. Large numbers of Voights Creek Hatchery coho fingerlings were released into the White River between 1976 and 1995. In the absence of genetic analysis we are assuming that mixing of native and non-native coho has occurred.

PUYALLUP – PUYALLUP PINK

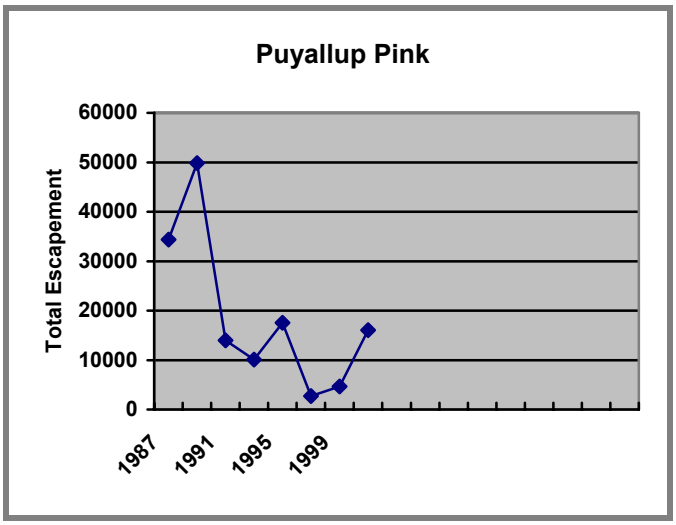
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1987	34,400
1989	49,850
1991	14,000
1993	10,069
1995	17,569
1997	2,732
1999	4,653
2001	16,058



Data are South Prairie Creek escapement estimates based on serial spawner counts from the mouth to RM 12.6.

The status of Puyallup pink salmon is rated **Depressed** in 2002 due to a **short-term severe decline** in escapements. This stock has displayed a long-term pattern of relatively stable escapements, showing some of the inter-annual variability typical of other pink stocks. However, the 1997 and 1999 escapements of Puyallup pink salmon were very low (2,732 and 4,653 spawners respectively), thus the status rating has changed to depressed.

STOCK DEFINITION

Puyallup pink salmon were identified as a stock based on their distinct spawning distribution and genetic composition.

SPAWNING DISTRIBUTION: Spawning takes place mainly in South Prairie Creek. Some spawning also occurs in the mainstem Carbon and Puyallup rivers and in other tributaries such as Fennel, Voights and Kapowsin creeks.

SPAWNING TIMING: Spawning generally occurs from September through October.

PUYALLUP – PUYALLUP PINK

GENETIC ANALYSIS: Genetic analysis has shown Puyallup pinks to be significantly different from all Washington pink stocks examined (Shaklee 2001).

STOCK ORIGIN

This is a **native** stock with **wild** production.

PUYALLUP – MAINSTEM PUYALLUP WINTER STEELHEAD

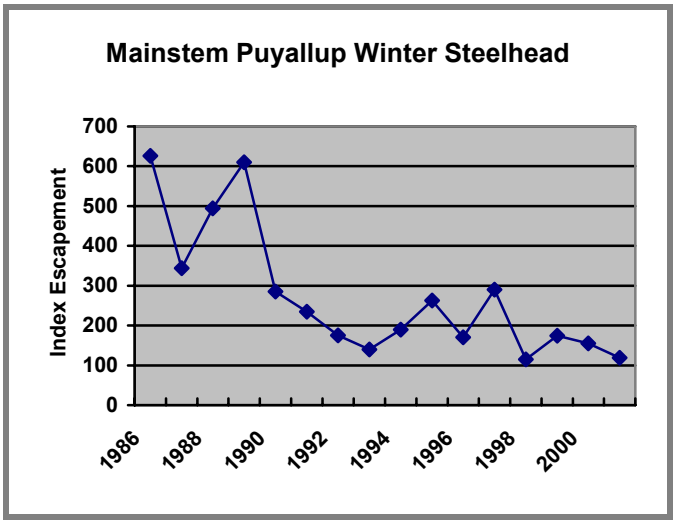
Stock Status

1992 Status	2002 Status
Healthy	Depressed

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Index Escapement
1986	626
1987	344
1988	494
1989	610
1990	285
1991	235
1992	175
1993	140
1994	190
1995	263
1996	170
1997	290
1998	115
1999	174
2000	155
2001	119



Data are total escapement estimates based on redd counts in all suitable spawning habitat of the Puyallup River and its tributaries.

The status of the stock is rated **Depressed** in 2002 based on a **long-term negative trend** in escapements.

Stock Definition

Mainstem Puyallup winter steelhead were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Most spawning takes place in the mainstem Puyallup and tributaries including Neisson, Ladout, Kellogg, Fennel, Canyonfalls, Fox and Kapowsin creeks.

Spawning Timing: Spawning generally occurs from early March through mid-June.

Genetic Analysis: Allozyme analysis of Puyallup winter steelhead sampled in 1994 clusters them with winter steelhead in the Cedar, Green and White rivers and with some Snohomish basin steelhead (Phelps et al. 1997).

PUYALLUP – MAINSTEM PUYALLUP WINTER STEELHEAD

Stock Origin

This is a **native** stock with **wild** production.

PUYALLUP – WHITE RIVER (PUYALLUP) WINTER STEELHEAD

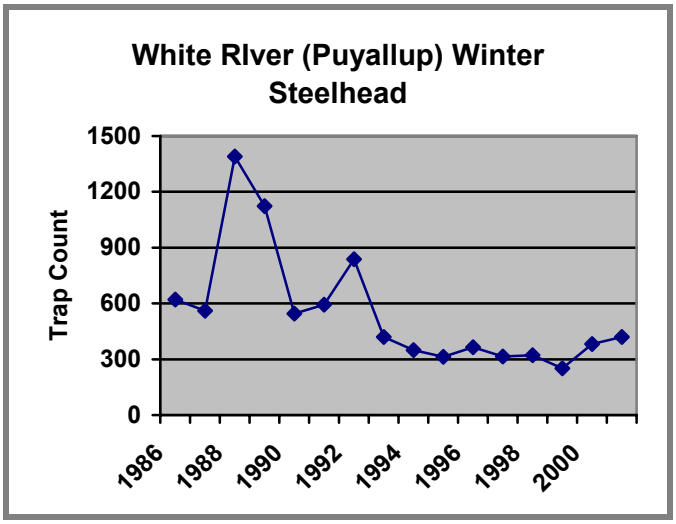
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TRAP COUNT
1986	621
1987	561
1988	1,390
1989	1,123
1990	545
1991	593
1992	837
1993	420
1994	349
1995	313
1996	364
1997	314
1998	322
1999	252
2000	382
2001	420



Data are counts of adult steelhead at the US Army Corps of Engineers adult trap at the Buckley Dam (RM 24.3) on the White River.

The status of the stock is rated **Depressed** in 2002 based on a **long-term negative trend** and **chronically low** trap counts since 1992.

STOCK DEFINITION

White River (Puyallup) winter steelhead were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning takes place in the upper reaches of the White, Greenwater and Clearwater rivers and their tributaries.

SPAWNING TIMING: Spawning generally occurs from early March through mid-June.

PUYALLUP – WHITE RIVER (PUYALLUP) WINTER STEELHEAD

Genetic Analysis: Allozyme analysis of White River winter steelhead sampled in 1994 clusters them with winter steelhead in the Cedar, Green and Puyallup rivers and with some Snohomish basin steelhead stocks (Phelps et al. 1997).

Stock Origin

This is a **native** stock with **wild** production.

PUYALLUP – CARBON WINTER STEELHEAD

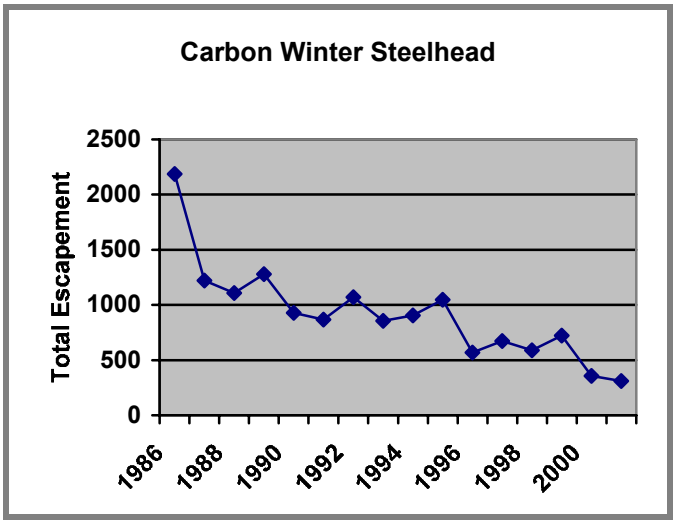
Stock Status

1992 Status	2002 Status
Healthy	Depressed

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	2,186
1987	1,220
1988	1,108
1989	1,280
1990	928
1991	868
1992	1,070
1993	856
1994	906
1995	1,046
1996	568
1997	672
1998	590
1999	722
2000	356
2001	311



Data are total escapement estimates based on redd counts in all suitable steelhead spawning habitat of the Carbon River.

The status of the stock is rated **Depressed** in 2002 due to a **long-term negative trend** and a **short-term severe decline** in wild spawner escapement estimates in 2000 and 2001.

Stock Definition

Carbon winter steelhead were identified as a stock based on their distinct spawner distribution.

Spawning Distribution: Most spawning takes place in Carbon River tributaries including South Prairie, Voight and Wilkeson creeks.

Spawning Timing: Spawning generally occurs from early March through mid-June.

Genetic Analysis: No genetic analysis has been done on Carbon winter steelhead.

PUYALLUP – CARBON WINTER STEELHEAD

Stock Origin

This is a **native** stock with **wild** production.

NISQUALLY – NISQUALLY CHINOOK

This stock was called Nisqually summer/fall chinook in the 1992 SASSI. Run timing designations have been dropped from most Puget Sound chinook stock names because they have been inconsistently applied.

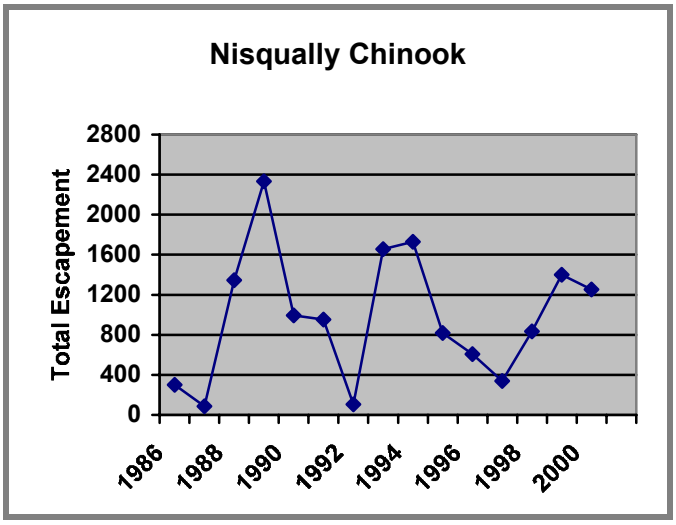
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	TOTAL ESCAPEMENT
1986	302
1987	85
1988	1,342
1989	2,332
1990	994
1991	953
1992	106
1993	1,655
1994	1,730
1995	817
1996	606
1997	340
1998	834
1999	1,399
2000	1,253
2001	1,079



Data are total escapement estimates based on mainstem Nisqually redd counts from RM 21.8 to 26.2 and Mashel River peak live plus dead fish counts from RM 0.0 to 3.2.

Stock status is rated **Depressed** in 2002 due primarily to low stock productivity. The mean number of spawners for brood years 1988 through 1997 of 1,064 should have produced a mean number of recruits of 5,062, even assuming low marine survival. However, the observed mean is only 3,815. In addition the mean escapement is less than the recovery goal of 2,590. The recovery goal for Nisqually chinook is not based on properly functioning [habitat] conditions (PFC+), as are most of the other Puget Sound chinook recovery goals (see Introduction for discussion). It is based on improved habitat conditions identified in the Nisqually Chinook Recovery Plan (NCRT 2001).

NISQUALLY – NISQUALLY CHINOOK

Stock Definition

Spawning Distribution: Most spawning occurs in the mainstem Nisqually from RM 15.0 to 40.0, Mashel River (RM 0.0 to 3.2), Ohop Creek (RM 0.0 to 6.2), and approximately the lower half-mile of Twenty-five Mile Creek, Yelm Creek, Horn Creek, and Muck Creek.

Spawning Timing: Spawning generally occurs from late September through October.

Genetic Analysis: Chinook spawning in the Nisqually mainstem, Mashel River and Ohop Creek were sampled in 1998, 1999 and 2000. Allele frequencies of the combined samples were similar to those of a few South Sound hatchery and wild chinook populations. They were distinct from North Sound and other Washington chinook. The extent of hatchery-origin fish in the genetic samples is currently unknown (Anne Marshall, WDFW, personal communication).

Stock Origin

This is a **mixed** stock with **composite** production. The native chinook stock may have been largely replaced by Soos Creek Hatchery (Green River) chinook released into the Nisqually system and from Soos Creek Hatchery-origin strays from the Nisqually Tribe's Clear Creek and Kalama Creek hatcheries and the WDFW McAllister Creek Hatchery. Stock origin is difficult to determine because the life history and genetic composition of the native Nisqually stock may have resembled those of other South Sound chinook stocks, including Green River and Puyallup (Anne Marshall, WDFW, personal communication). Current genetic and life history patterns could reflect native stock characteristics and/or extensive introgression with South Sound hatchery fish and so are not very informative (Puget Sound TRT 2001).

NISQUALLY – NISQUALLY WINTER CHUM

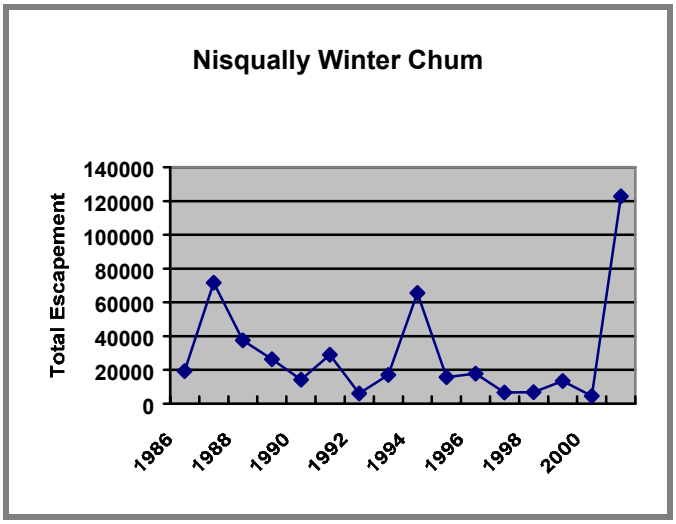
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: *Good*

YEAR	TOTAL ESCAPEMENT
1986	19,406
1987	71,642
1988	37,433
1989	26,307
1990	14,246
1991	28,960
1992	6,004
1993	17,103
1994	65,480
1995	15,690
1996	17,879
1997	6,694
1998	68,473
1999	13,374
2000	4,564
2001	122,744



Data are total escapement estimates for the Nisqually system based on index live spawner counts made in the Nisqually River, Muck, Yelm, Mounts and McAllister creeks.

Nisqually winter chum are rated **Healthy** in 2002. Although the 2000 escapement of this stock (4,252 spawners) was the lowest since estimates began in 1968, other recent escapements have been within the normal range for this stock, except for the very high 2001 escapement of 122,744.

STOCK DEFINITION

Nisqually winter chum were identified as a stock based on their distinct spawning distribution, late spawning timing, and genetic composition.

SPAWNING DISTRIBUTION: Most spawning takes place in the mainstem Nisqually River, in tributaries such as Muck and Yelm creeks and in two local independent streams, Mounts and McAllister creeks.

SPAWNING TIMING: Spawning generally occurs from January through early March.

GENETIC ANALYSIS: Allozyme analysis has shown Nisqually winter chum to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

NISQUALLY – NISQUALLY WINTER CHUM

Stock Origin

This is a **native** stock with **wild** production.

NISQUALLY – NISQUALLY COHO

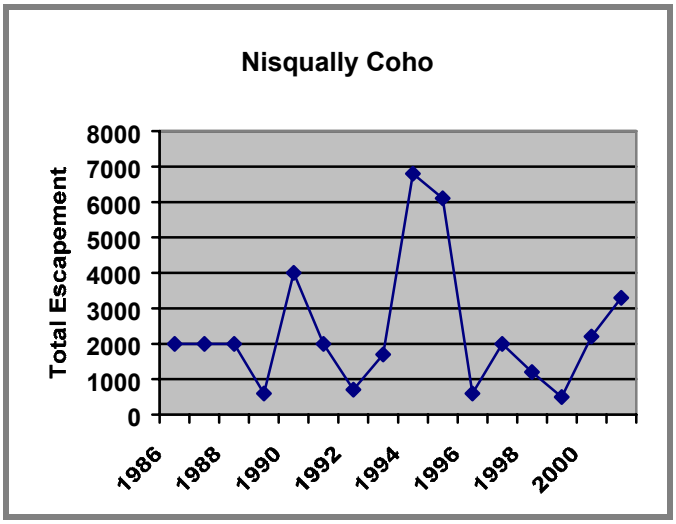
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Fair

Year	Total Escapement
1986	2,000
1987	2,000
1988	2,000
1989	600
1990	4,000
1991	2,000
1992	700
1993	1,700
1994	6,800
1995	6,100
1996	600
1997	2,000
1998	1,200
1999	500
2000	2,200
2001	3,300



Data are total escapement estimates based on serial spawner counts in index areas in Twenty-five Mile Creek (RM 0.0 – 0.6), Toboton Creek (RM 1.0 to 1.3 and 1.8 to 2.7) and Tanwax Creek (RM 1.0 – 1.5).

A short-term decline in escapements and run sizes occurred in this and all other South Sound coho stocks in mid-to late 1990s, largely the outcome of a precipitous plunge in South Sound coho marine survival rates. Escapements are still above historical lows, and largely in the range often observed in the past, so the stock is rated **Healthy** in 2002.

Stock Definition

Nisqually coho were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Spawning takes place throughout the Nisqually watershed up to LaGrande (~RM 40) and in McAllister Creek.

Spawning Timing: Spawning generally occurs from mid-November to mid-January, however it sometimes extends later than in other south Puget Sound coho stocks.

Genetic Analysis: No genetic analysis has been done on Nisqually coho.

NISQUALLY – NISQUALLY COHO

Stock Origin

This is a **mixed** stock with **composite** production. There was a significant history of releases of non-native hatchery coho into the Nisqually basin. Large numbers of hatchery-origin strays have been identified in other naturally spawning South Sound coho populations. Increased proportions of hatchery stock returns, resulting from reduced fisheries, may occur in this stock as well.

NISQUALLY – NISQUALLY PINK

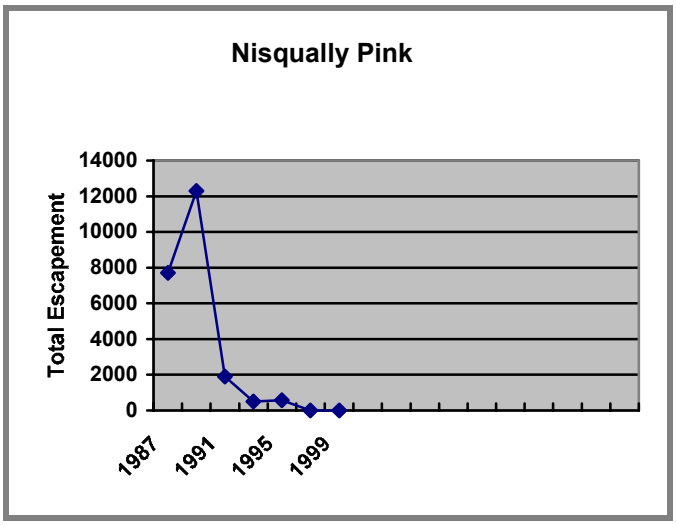
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Unknown

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Poor

YEAR	TOTAL ESCAPEMENT
1987	7,700
1989	12,300
1991	1,900
1993	500
1995	579
1997	No data
1999	No data
2001	No data



Data are total escapement estimates for the Nisqually system based on index counts made in Mashel River and Ohop Creek during odd-numbered years.

The status of Nisqually pink salmon is rated **Unknown** in 2002**,** but all indications are that the population is declining. This stock spawns in two tributary streams where fish can be visually counted, the Mashel River and Ohop Creek. However, it is likely that only a fraction of the pink population utilize these streams and that the majority of the fish spawn in the mainstem Nisqually River. During recent surveys on the Mashel River and Ohop Creek, no pink salmon have been seen. No pink salmon counts have been made on Nisqually River mainstem reaches for the last several years.

STOCK DEFINITION

Nisqually pink salmon were identified as a stock based on their distinct spawning distribution and genetic composition.

SPAWNING DISTRIBUTION: Most spawning takes place in the mainstem Nisqually River. Spawning also occurs in tributaries such as Mashel River and Ohop Creek.

SPAWNING TIMING: Spawning generally occurs from September through October.

GENETIC ANALYSIS: Genetic analysis has shown Nisqually pinks to be significantly different from all other Washington pink stocks examined (Shaklee 2001).

NISQUALLY – NISQUALLY PINK

Stock Origin

This is a **native** stock with **wild** production.

NISQUALLY – NISQUALLY WINTER STEELHEAD

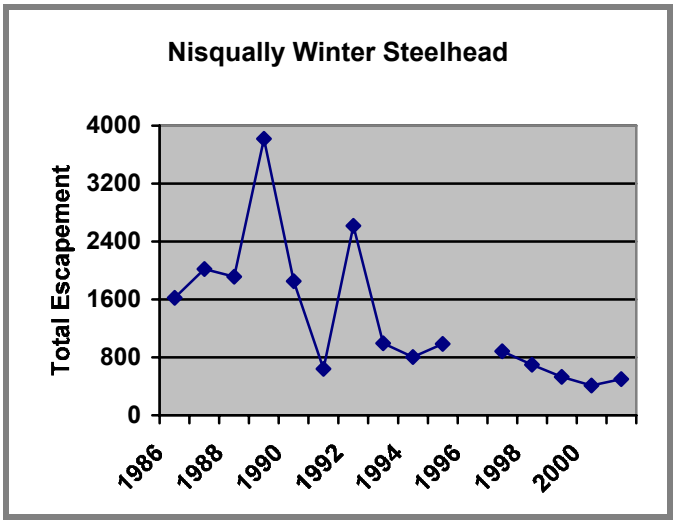
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Very good

YEAR	TOTAL ESCAPEMENT
1986	1,620
1987	2,022
1988	1,916
1989	3,817
1990	1,853
1991	642
1992	2,618
1993	993
1994	804
1995	987
1996	No data
1997	882
1998	700
1999	530
2000	411
2001	500



Data are total escapement estimates based on Nisqually River redd counts.

The status of the stock in 2002 is rated **Depressed** due to a **long-term negative trend** and **chronically low** escapement estimates. Total escapements have fallen below the escapement goal of 2,000 wild spawners in every year beginning in 1993.

STOCK DEFINITION

Nisqually winter steelhead were identified as a stock based on their distinct spawning distribution.

SPAWNING DISTRIBUTION: Most spawning occurs in the mainstem Nisqually River, Muck Creek, Tanwax Creek, Ohop Creek, the Mashel River and their tributaries. Spawning also occurs in McAllister Creek.

SPAWNING TIMING: Spawning generally occurs from early March through mid-June.

GENETIC ANALYSIS: Allozyme analysis of Nisqually winter steelhead sampled in 1994 clustered them most closely with winter steelhead in Deep Creek (Strait of Juan de Fuca) and with other stocks from the Strait, the North Coast and lower Columbia River. This group of stocks is similar to the Chambers Creek winter steelhead hatchery stock, which has been released throughout Washington (Phelps et al. 1997).

NISQUALLY – NISQUALLY WINTER STEELHEAD

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – SOUTH SOUND TRIBS CHINOOK

Stock Status

1992 Status	2002 Status
Healthy	**Not Rated**

The evaluation of the South Sound Tribs chinook stock in the 1992 SASSI regarded all naturally spawning fish, including hatchery returns released or escaping above hatchery racks. These hatchery-origin adults, spawning in their basins of origin, were responsible for the large escapement numbers and the healthy rating for this stock in 1992.

In SaSI 2002, the fall chinook spawning aggregations observed in south Puget Sound independent tributaries are not rated. The Co-managers support this action with the following rationale: (1) The independent tributaries in south Puget Sound are not typical chinook habitat because of relatively small stream size and low flows during the late summer/early fall spawning season. (2) The current low escapements (outside of streams that support on-station chinook production programs) are likely the result of past hatchery plants or straying from either current South Sound hatchery production or viable south Sound natural populations. (3) Fall chinook likely were not historically self-sustaining in these habitats and have little chance of perpetuating themselves through natural production.

Stock Definition

We do not regard fall chinook spawning in generally small independent South Sound streams as being a distinct stock in the same sense that the term is used elsewhere in this inventory.

Spawning Distribution: Most spawning takes place McAllister Creek, Deschutes River, Percival Creek and other independent tributaries such Woodland Creek, Mill Creek, Goldsborough Creek, Case Inlet streams, Carr Inlet streams, and East Kitsap streams.

Spawning Timing: Spawning generally occurs from late September through October.

Genetic Analysis: No genetic analysis has been done on South Sound Tribs chinook.

Stock Origin

South Sound tributaries are streams that we consider probably did not possess sustainable populations of chinook historically. Present-day chinook returns are due to the large releases from a number of South Sound hatcheries. Although locally-returning chinook are now used for broodstock at these hatcheries, their ancestry is largely Soos Creek Hatchery (Green River) chinook.

SOUTH SOUND – CHAMBERS CREEK SUMMER CHUM

Stock Status

1992 Status	2002 Status
Extinct	**Extinct**

Stock Status Rating Data

The status of this stock is **Extinct**. Counts recorded at the WDFW trap at the mouth of Chambers Creek show that the last three summer-timed chum were seen in 1983.

Stock Definition

Chambers Creek summer chum were identified as a stock based on their distinct spawning distribution and spawning timing.

Spawning Distribution: Spawning took place in Chambers and Leach creeks.

Spawning Timing: Spawning occurred from late September to late October.

Genetic Analysis: No genetic analysis was done on Chambers Creek summer chum.

Stock Origin

This was a **native** stock with **wild** production.

SOUTH SOUND – HAMMERSLEY INLET SUMMER CHUM

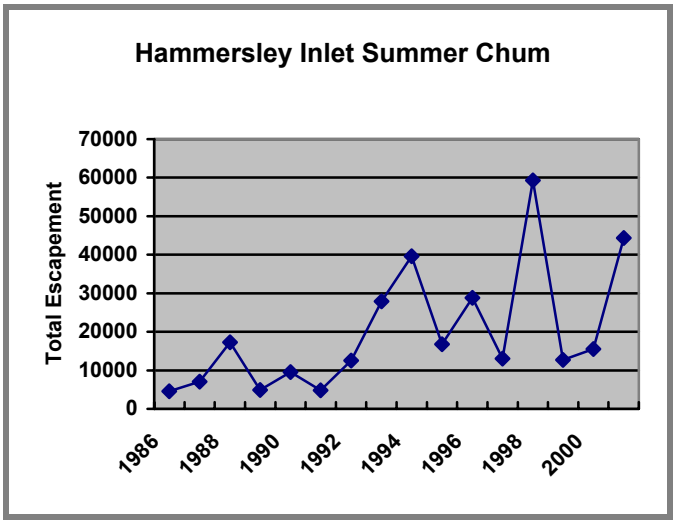
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	4,597
1987	7,092
1988	17,273
1989	4,864
1990	9,582
1991	4,828
1992	12,516
1993	27,874
1994	39,581
1995	16,766
1996	28,791
1997	13,002
1998	59,278
1999	12,734
2000	15,559
2001	44,312



Data are total escapement estimates for summer chum from Hammersley Inlet streams based on index live spawner counts made annually in Johns, Cranberry and Deer creeks.

Stock status is rated **Healthy** in 2002. The escapements of the stock have been strong since the 1993 return year.

Stock Definition

Hammersley Inlet summer chum were identified as a stock based on their distinct spawning distribution, spawning timing, and genetic composition.

Spawning Distribution: Most spawning takes place in Johns, Cranberry and Deer creeks.

Spawning Timing: Spawning generally occurs from September through late October.

Genetic Analysis: Allozyme analysis has shown Hammersley Inlet summer chum to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – HAMMERSLEY INLET SUMMER CHUM

Stock Origin

This is a **native** stock with **wild** production. The Johns Creek Hatchery was a major contributor to the run from the late 1970s through the mid-1980s and supplemented a large wild escapement into Johns Creek using native broodstock. The hatchery closed in 1991. Currently, escapements in Johns Creek and other Hammersley Inlet streams are the result of natural spawning.

SOUTH SOUND – CASE INLET SUMMER CHUM

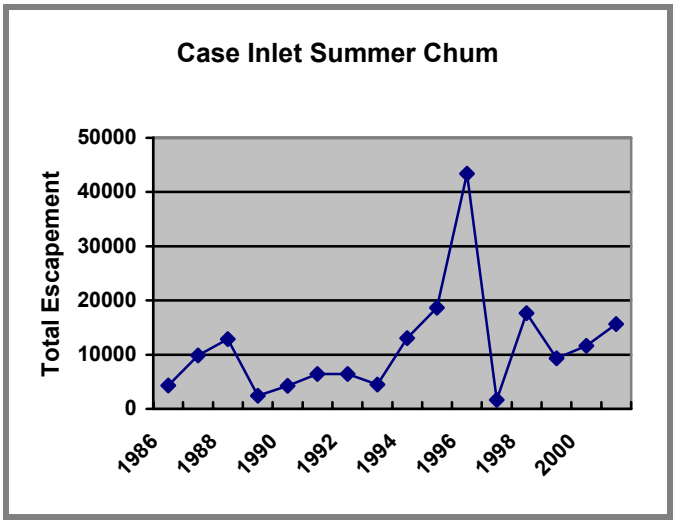
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	4,310
1987	9,857
1988	12,874
1989	2,414
1990	4,233
1991	6,436
1992	6,409
1993	4,506
1994	13,044
1995	18,641
1996	43,389
1997	1,646
1998	17,640
1999	9,339
2000	11,658
2001	15,653



Data are total escapement estimates for summer chum in Case Inlet streams based on index counts of live spawners made annually in Sherwood, Coulter and Rock creeks.

Stock status is rated **Healthy** in 2002. The escapements of the Case Inlet summer chum salmon stock have been strong since the early 1990s, with one extraordinary escapement of 43,389 spawners in 1996.

Stock Definition

Case Inlet summer chum were identified as a stock based on their distinct spawning distribution, spawning timing, and genetic composition.

Spawning Distribution: Most spawning takes place in Sherwood, Coulter and Rocky creeks.

Spawning Timing: Spawning generally occurs from mid-October through late October.

Genetic Analysis: Allozyme analysis has shown Case Inlet summer chum salmon to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – CASE INLET SUMMER CHUM

Stock Origin

This is a **native** stock with **wild** production. Wild escapements in Coulter and Sherwood creek were supplemented by large hatchery program using native broodstock from the late 1970s through the mid-1980s, when the program was discontinued. Currently the stock is sustained entirely by natural spawning.

SOUTH SOUND – BLACKJACK CREEK SUMMER CHUM

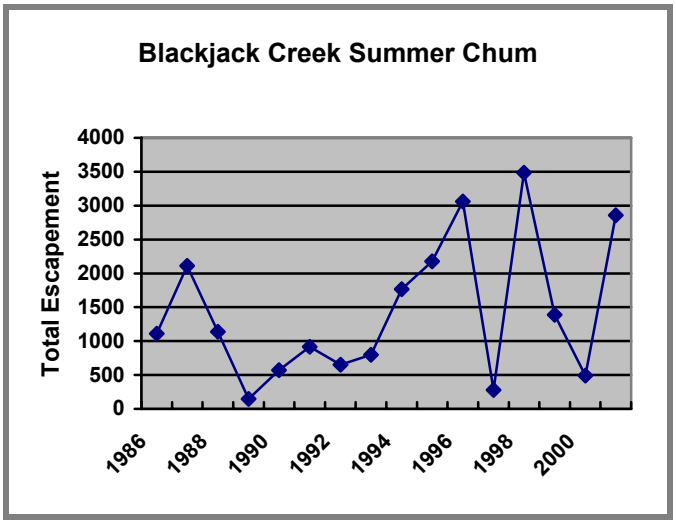
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	1,112
1987	2,109
1988	1,136
1989	146
1990	570
1991	918
1992	650
1993	797
1994	1,766
1995	2,179
1996	3,058
1997	280
1998	3,486
1999	1,388
2000	489
2001	2,856



Data are total escapement estimates based on annual index counts of live spawners in Blackjack Creek, an independent East Kitsap stream that flows into Sinclair Inlet.

Stock status is rated **Healthy** in 2002. This stock has a long-term pattern of relatively stable escapements, with somewhat higher escapements in the 1990s.

STOCK DEFINITION

Blackjack Creek summer chum were identified as a stock based on their distinct spawner distribution, spawning timing, and genetic composition.

SPAWNING DISTRIBUTION: Most spawning takes place in Blackjack Creek, although some fish utilize Curley Creek, a Yukon Harbor tributary.

SPAWNING TIMING: Spawning generally occurs from mid-September through late October.

GENETIC ANALYSIS: Allozyme analysis has shown Blackjack Creek summer chum salmon to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – BLACKJACK CREEK SUMMER CHUM

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – HENDERSON INLET FALL CHUM

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Henderson Inlet fall chum, so their status is still **Unknown** in 2002. Chum salmon are observed in Woodland Creek during surveys conducted for coho salmon. Larger numbers of chum salmon spawn downstream of the coho index area, so the numbers of chum do not necessarily reflect stock status.

Stock Definition

Henderson Inlet fall chum were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Most spawning takes place in Woodland and Woodard creeks.

Spawning Timing: Spawning generally occurs from late November through December.

Genetic Analysis: No genetic analysis has been done on Henderson Inlet fall chum.

Stock Origin

This is a **mixed** stock with **wild** production. Elson Creek Hatchery and Minter Creek Hatchery chum stocks have been planted in both Woodard and Woodland creeks in the past, however Woodard Creek may still have a remnant native run.

SOUTH SOUND – ELD INLET FALL CHUM

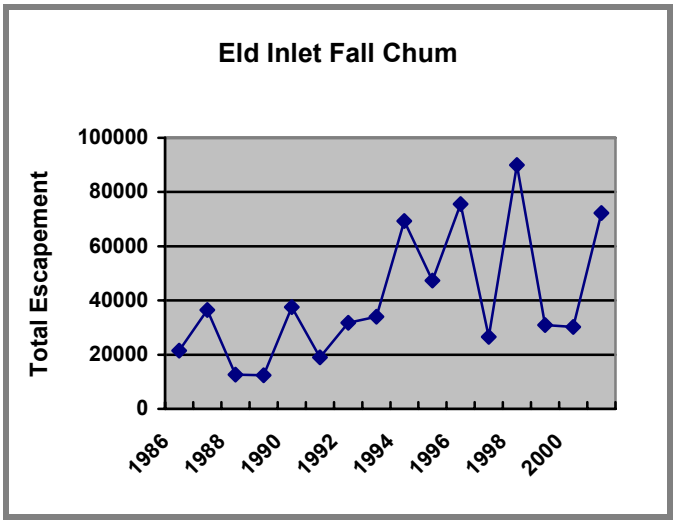
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	21,517
1987	36,424
1988	12,661
1989	12,395
1990	37,567
1991	18,966
1992	31,773
1993	34,001
1994	69,274
1995	47,340
1996	75,608
1997	26,603
1998	89,908
1999	30,920
2000	30,166
2001	72,215



Data are total escapement estimates based on index counts of live spawners made annually in McLane, Perkins, Swift and Perry creeks.

Stock status is rated **Healthy** in 2002. Escapements have been strong since the mid-1980s with very large escapements (in excess of 45,00 spawners) between 1994 and 1998 and in 2001. This stock is robustly healthy.

STOCK DEFINITION

Eld Inlet fall chum were identified as a stock based on their distinct spawning distribution and genetic composition.

SPAWNING DISTRIBUTION: Most spawning takes place in McLane, Swift and Perry creeks.

SPAWNING TIMING: Spawning generally occurs from late November through early January.

GENETIC ANALYSIS: Allozyme analysis has shown Eld Inlet Fall chum salmon to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – ELD INLET FALL CHUM

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – TOTTEN INLET FALL CHUM

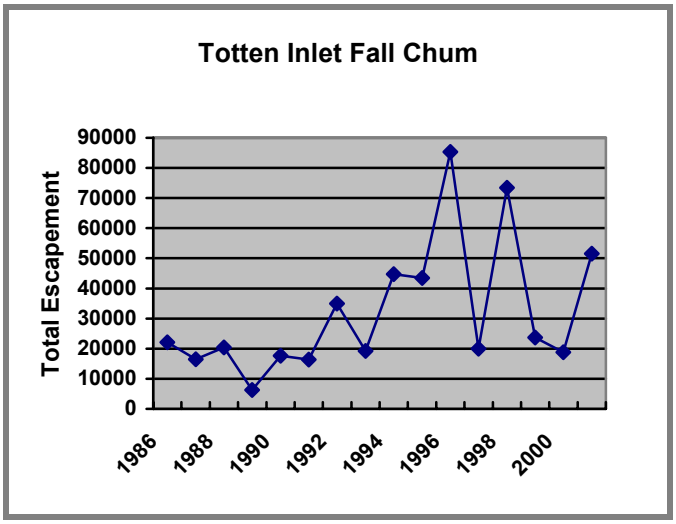
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	22,095
1987	16,433
1988	20,355
1989	6,276
1990	17,625
1991	16,390
1992	34,986
1993	19,239
1994	44,708
1995	43,494
1996	85,272
1997	19,990
1998	73,427
1999	23,680
2000	18,776
2001	51,552



Data are estimates of total escapement of fall chum to Totten Inlet streams based on index counts of live spawners made annually in Kennedy and Schneider creeks.

Stock status is rated **Healthy** in 2002. Escapements have been strong since the mid-1980s with very large escapements in 1994 and 1998, 85,272 and 73,427 spawners respectively. This stock is robustly healthy.

Stock Definition

Totten Inlet fall chum were identified as a stock based on their distinct spawning distribution, genetic differences and run timing.

Spawning Distribution: Most spawning takes place in Kennedy and Schneider creeks.

Spawning Timing: Spawning generally occurs in late October through mid-December.

Genetic Analysis: Allozyme analysis has shown Totten Inlet Fall chum salmon to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995). A unique genetic mark was applied to Kennedy Creek chum during the 1975-1980 return years.

SOUTH SOUND – TOTTEN INLET FALL CHUM

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – SKOOKUM INLET FALL CHUM

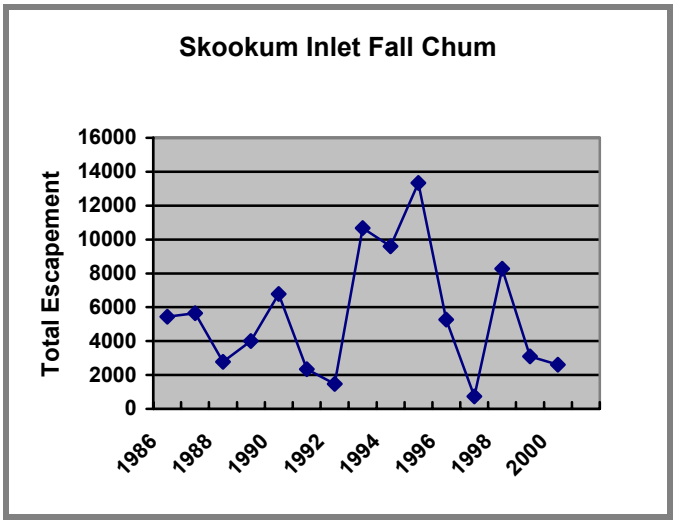
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	5,449
1987	5,643
1988	2,779
1989	4,010
1990	6,783
1991	2,339
1992	1,476
1993	10,672
1994	9,600
1995	13,334
1996	5,263
1997	740
1998	8,268
1999	3,089
2000	2,601
2001	9,068



Data are total escapement estimates based on index counts of live spawners made annually in Little Creek.

Stock status is rated **Healthy** in 2002. The escapements of Skookum Inlet fall chum salmon stock have been generally strong since the mid-1980s.

Stock Definition

Skookum Inlet fall chum were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Most spawning takes place in Skookum Creek and its tributary, Little Creek.

Spawning Timing: Spawning generally occurs from late November through early January.

Genetic Analysis: Allozyme analysis has shown Skookum Inlet Fall chum salmon to be closely related to the Elson Creek Hatchery chum stock, which was derived from local wild populations (Phelps et al. 1995).

SOUTH SOUND – SKOOKUM INLET FALL CHUM

Stock Origin

This is probably a **mixed** stock with **wild** production. Elson Creek Hatchery chum releases occurred in this area. Hatchery plants and straying from the Elson Creek facility may have affected the native component of Skookum fall chum creating a mixed stock or may have replaced the native component with an introduced hatchery stock. The Elson Creek Hatchery no longer produces chum salmon.

SOUTH SOUND – UPPER SKOOKUM CREEK FALL CHUM

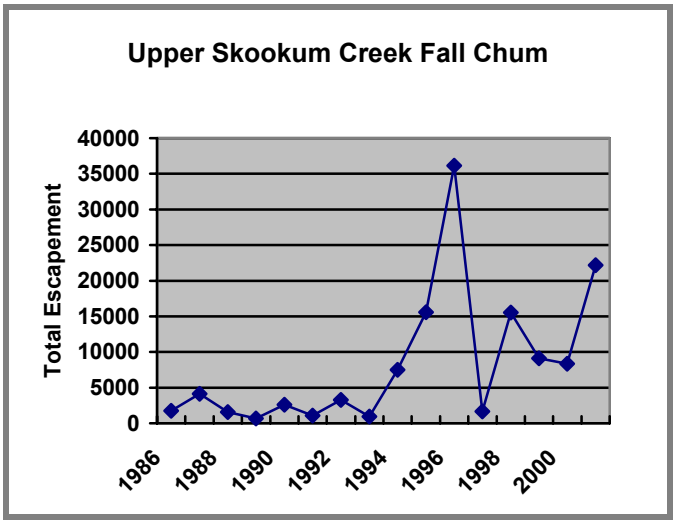
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	1,759
1987	4,152
1988	1,555
1989	679
1990	2,612
1991	1,095
1992	3,272
1993	964
1994	7,493
1995	15,567
1996	36,133
1997	1,662
1998	15,524
1999	9,116
2000	8,359
2001	22,167



Data are total escapement estimates based on annual index counts of live spawners in Skookum Creek.

Stock status is rated **Healthy** in 2002. The escapements of Upper Skookum Creek fall chum salmon stock increased in the mid-1980s, from previous escapements generally in the hundreds, then took a substantial leap during the period of 1994 to 2001.

Stock Definition

Upper Skookum Creek fall chum were identified as a stock based on their distinct spawning distribution and run timing.

Spawning Distribution: Most spawning takes place between RM 6 and RM 8 in Skookum Creek.

Spawning Timing: Spawning generally occurs from late October through December.

Genetic Analysis: Allozyme analysis has shown Upper Skookum Creek fall chum salmon to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – UPPER SKOOKUM CREEK FALL CHUM

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – JOHNS/MILL CREEKS FALL CHUM

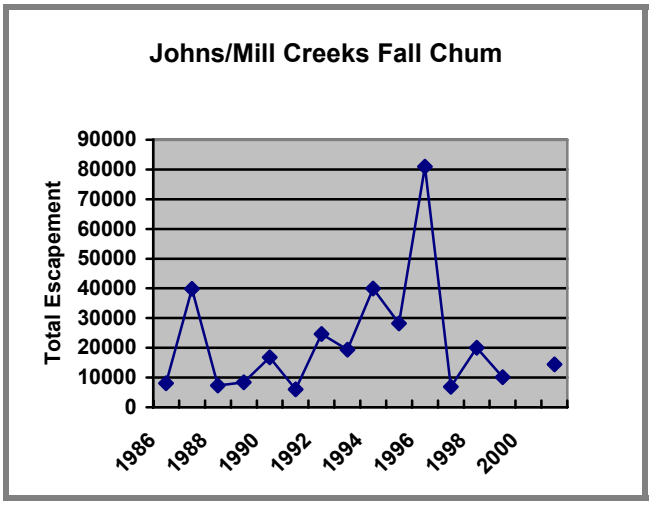
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	8,115
1987	39,856
1988	7,301
1989	8,444
1990	16,767
1991	6,035
1992	24,623
1993	19,348
1994	39,903
1995	28,252
1996	80,961
1997	6,889
1998	19,999
1999	10,128
2000	No data
2001	14,400



Data are total escapement estimates based on annual index counts of live spawners in Johns and Mill creeks.

Stock status is rated **Healthy** in 2002. This stock has a long-term pattern of relatively stable escapements, with somewhat higher escapements in the 1990s.

Stock Definition

Johns/Mill Creeks fall chum were identified as a stock based on their distinct spawning distribution and spawning timing. Much of the production in this area comes from wild escapement in Johns Creek. Mill Creek escapement is primarily based on wild spawning fish with a narrower run timing (November to December spawner). However, because of the over-lap in run timing, they can be considered the same stock.

Spawning Distribution: Most spawning takes place in Johns Creek. Spawning also occurs in Mill Creek.

Spawning Timing: Spawning generally occurs from November through early February.

SOUTH SOUND – JOHNS/MILL CREEKS FALL CHUM

GENETIC ANALYSIS: Allozyme analysis has shown Johns/Mill Creek fall chum salmon to have a genetically mixed background. Mill Creek may have a remnant native fall chum population (Phelps et al. 1995).

STOCK ORIGIN

This is a **mixed** stock with **wild** production. At one point, Hood Canal hatchery chum were introduced into the system. Fisheries were conducted in attempts to remove these fish but were not considered to be effective. Hatchery plants from Hood Canal and other facilities (Minter Creek) may have affected the genetic make-up of the native stock and created a mixed stock.

SOUTH SOUND – GOLDSBOROUGH/SHELTON CREEKS FALL CHUM

STOCK STATUS

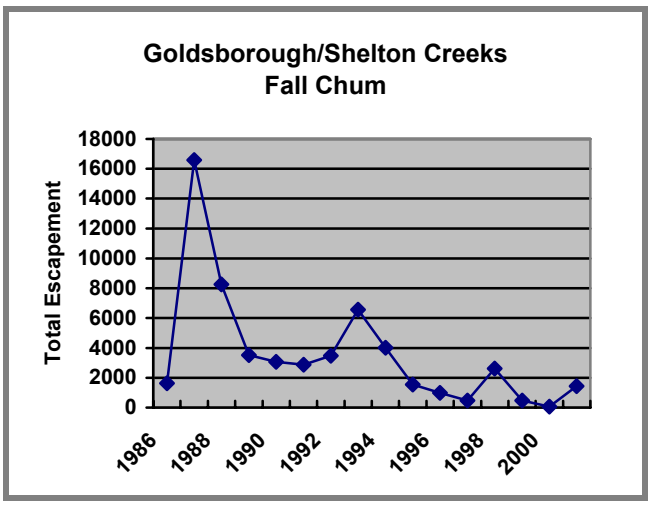
1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	1,632
1987	16,576
1988	8,266
1989	3,528
1990	3,061
1991	2,884
1992	3,482
1993	6,567
1994	4,021
1995	1,542
1996	992
1997	467
1998	2,611
1999	471
2000	65
2001	1,433*

*Preliminary Estimate



Data are total escapement estimates based on annual index counts live spawner in Goldsborough and Shelton creeks.

Stock status is rated **Depressed** in 2002 due to a **long-term negative trend** in escapement and a **short-term severe decline** in 1997, 1999 and 2000.

STOCK DEFINITION

Golsborough/Shelton Creeks fall chum were identified as a stock based on their distinct spawning distribution and run timing. They have a later run timing than other Hammersley Inlet spawners.

SPAWNING DISTRIBUTION: Most spawning takes place in Goldsborough and Shelton Creeks.

SPAWNING TIMING: Spawning generally occurs from late December through early February.

GENETIC ANALYSIS: Allozyme analysis has shown Goldsborough/Shelton Creeks fall chum to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – GOLDSBOROUGH/SHELTON CREEKS FALL CHUM

Stock Origin

This is a **native** stock with **wild** production. Although Shelton Creek receives hatchery plants, Goldsborough Creek is dependent on wild escapement.

SOUTH SOUND – CASE INLET FALL CHUM

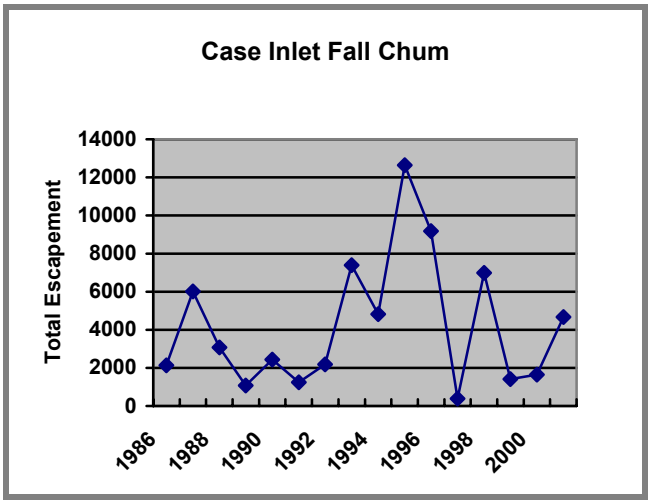
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	2,130
1987	6,021
1988	3,072
1989	1,081
1990	2,444
1991	1,241
1992	2,191
1993	7,387
1994	4,818
1995	12,645
1996	9,184
1997	390
1998	6,994
1999	1,420
2000	1,640
2001	4,664



Data are total escapement estimates based on annual index counts of live spawners in Sherwood, Coulter and Rocky creeks.

Stock status is rated **Healthy** in 2002. Escapements for the Case Inlet fall chum stock increased in the early 1980s and have been generally high through the 1990s.

Stock Definition

Case Inlet fall chum were identified as a stock based on their distinct spawning distribution, spawning timing, and genetic composition.

Spawning Distribution: Most spawning takes place in Sherwood, Coulter and Rocky creeks.

Spawning Timing: Spawning generally occurs from early December through mid-January.

Genetic Analysis: Allozyme analysis has shown Case Inlet fall chum salmon to be genetically distinct from all other Washington chum stocks examined (Phelps et al. 1995).

SOUTH SOUND – CASE INLET FALL CHUM

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – CARR INLET FALL CHUM

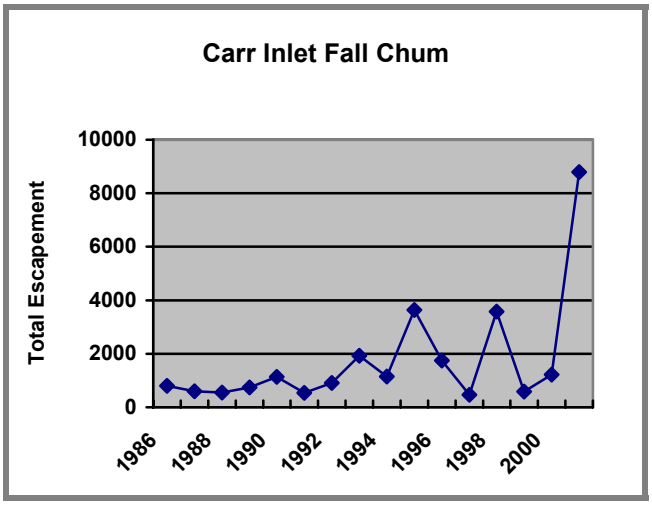
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	797
1987	601
1988	555
1989	745
1990	1,135
1991	537
1992	904
1993	1,922
1994	1,147
1995	3,640
1996	1,743
1997	463
1998	3,580
1999	587
2000	1,216
2001	8,791



Data are total escapement estimates based on annual index counts of live spawners in Carr Inlet streams.

Stock status is rated **Healthy** in 2002. Escapements increased substantially beginning in 1995 and have remained at high levels, primarily because of a successful chum salmon enhancement program at the Minter Creek Hatchery.

Stock Definition

Carr Inlet fall chum were identified as a stock based on their distinct spawning distribution. Burley Creek chum have an earlier spawning peak (November) than chum in Lackey Creek.

Spawning Distribution: Most spawning takes place in Burley and Lackey creeks.

Spawning Timing: Spawning generally occurs from late December through early January.

Genetic Analysis: Allozyme analysis has shown Carr Inlet fall chum salmon to have a mixed genetic background (Phelps et al. 1995). Minter Creek chum were derived from Elson Creek Hatchery stock, which was recently used to replace the previous Hood Canal-origin population. Lackey Creek may have a remnant native fall chum population.

SOUTH SOUND – CARR INLET FALL CHUM

Stock Origin

This is a **mixed** stock with **composite** production. Extensive hatchery introductions and strays from Minter Creek Hatchery have influenced the genetic makeup of wild spawning fish in this inlet. Prior to 1992, the Minter Creek Hatchery reared and released fall chum of Hood Canal origin. By 1992, this stock was replaced with the South Sound-origin Elson Creek Hatchery stock. The aggregate Carr Inlet stock should be considered mixed. Lackey Creek may be the lone remaining stream that could have native Carr Inlet fall chum.

SOUTH SOUND – GIG HARBOR/OLLALA CREEK FALL CHUM

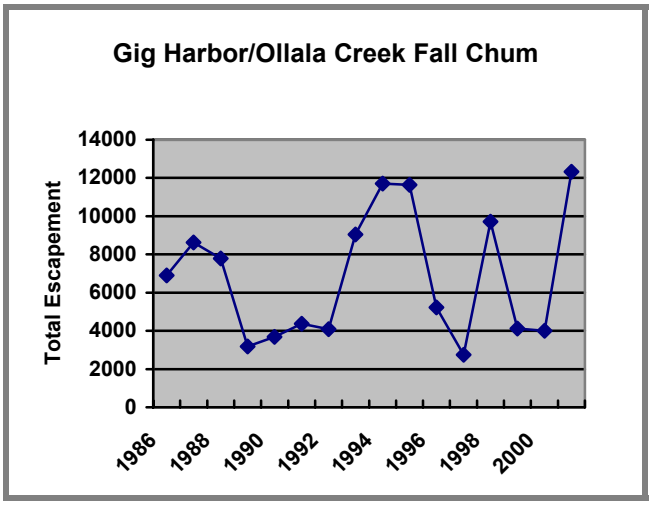
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	6,905
1987	8,628
1988	7,786
1989	3,185
1990	3,677
1991	4,369
1992	4,088
1993	9,038
1994	11,713
1995	11,638
1996	5,218
1997	2,749
1998	9,709
1999	4,120
2000	4,000
2001	12,325



Data are total escapement estimates based on live spawner counts in North, Crescent and Ollala creeks.

Stock status is rated **Healthy** in 2002. Escapements increased substantially beginning in 1995 and have remained at high levels, primarily because of the contributions of a local hatchery program.

Stock Definition

Gig Harbor/Ollala Creek fall chum were identified as a stock based on their distinct spawning distribution and spawning timing.

Spawning Distribution: Most spawning takes place in North (Donkey), Ollala, Curley and Crescent creeks.

Spawning Timing: Spawning generally occurs from late November through December.

Genetic Analysis: Allozyme analysis has shown Gig Harbor/Ollala Creek fall chum salmon to have a mixed genetic background (Phelps et al. 1995). North (Donkey) Creek chum are derived from Elson Creek Hatchery Stock (via Minter Creek).

SOUTH SOUND – GIG HARBOR/OLLALA CREEK FALL CHUM

Stock Origin

This is a **mixed** stock with **composite** production. Donkey Creek production has been supported by the Minter Creek Hatchery. Prior to 1989, the hatchery released fall chum of Hood Canal origin. These fish were replaced by Elson Creek Hatchery fall chum (a South Sound stock) by 1992. Chum in Ollala, Curley and Crescent creeks may be native.

SOUTH SOUND – DYES INLET/LIBERTY BAY FALL CHUM

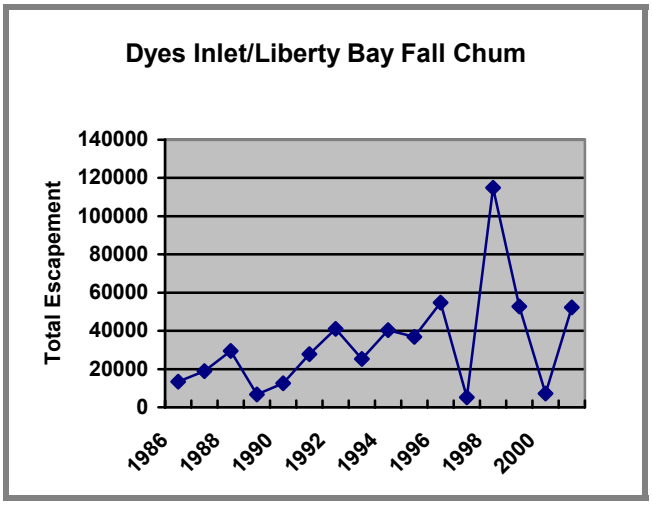
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	TOTAL ESCAPEMENT
1986	13,398
1987	18,933
1988	29,484
1989	6,691
1990	12,537
1991	27,841
1992	40,965
1993	25,222
1994	40,296
1995	36,790
1996	54,797
1997	5,266
1998	114,936
1999	52,693
2000	7,138
2001	52,215



Data are total escapement estimates based on live spawner counts in Chico, Barker, Dogfish, Clear, Steele and Scandia creeks.

Stock status is rated **Healthy**. Although the 1997 and 2000 escapements of this salmon stock were low, 5,038 and 7,191 spawners respectively, (orcas took about 18,000 fish in Dyes Inlet in 1997), other recent escapements have been higher than the normal range for this stock.

STOCK DEFINITION

Dyes Inlet/Liberty Bay fall chum were identified as a stock based on their distinct spawning distribution and spawning timing.

SPAWNING DISTRIBUTION: Most spawning takes place in the Chico Creek system and in nearby independent tributaries such as Barker, Dogfish, Clear, Johnson and Scandia creeks.

SPAWNING TIMING: Spawning generally occurs in November.

GENETIC ANALYSIS: Allozyme analysis has shown Dyes Inlet/Liberty Bay fall chum collected from Chico Creek to be genetically similar to Gorst Creek chum (Sinclair Inlet) (Phelps et al. 1995).

SOUTH SOUND – DYES INLET/LIBERTY BAY FALL CHUM

Stock Origin

This is a **native** stock with **composite** production. The tributaries of both Dyes Inlet and Liberty Bay have historically had significant hatchery plants from the Suquamish Tribe's Cowlings Creek Hatchery. The origin of the Cowlings Creek hatchery stock was Chico Creek fish, so this hatchery stock is considered a native stock within Dyes Inlet. Releases of the Cowling Creek hatchery stock into the tributaries of Liberty Bay have probably established a mixed stock with native remnant components.

SOUTH SOUND – SINCLAIR INLET FALL CHUM

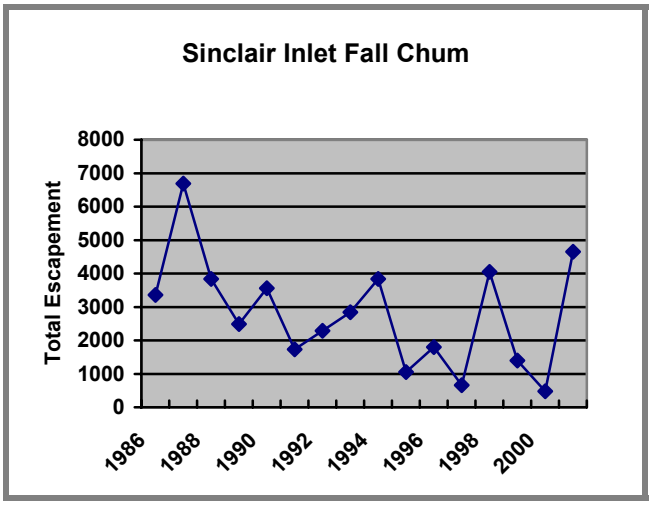
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Good

Year	Total Escapement
1986	3,360
1987	6,690
1988	3,840
1989	2,486
1990	3,561
1991	1,736
1992	2,289
1993	2,840
1994	3,838
1995	1,048
1996	1,799
1997	663
1998	4,045
1999	1,395
2000	477
2001	4,649



Data are total escapement estimates based on live spawner counts in Ross, Blackjack and Gorst creeks.

Stock status is rated **Healthy** in 2002. We do not consider that the low escapements in 1997 and 2000 indicate that the stock is declining or signal a need for corrective action. Early information on the 2002 return suggest that it will be larger than the 2001 return. We believe that the stock may be entering a period of increased escapements.

Stock Definition

Sinclair Inlet fall chum were identified as a stock based on their distinct spawning distribution and spawning timing.

Spawning Distribution: Most spawning takes place throughout Sinclair Inlet including tributaries such as Gorst, Anderson, Ross and Blackjack creeks.

Spawning Timing: Spawning generally occurs from December through early January.

Genetic Analysis: Allozyme analysis has shown Sinclair Inlet fall chum collected from Gorst Creek to be genetically similar to Chico Creek chum stock (Phelps et al. 1995).

SOUTH SOUND – SINCLAIR INLET FALL CHUM

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – CHAMBERS CREEK WINTER CHUM

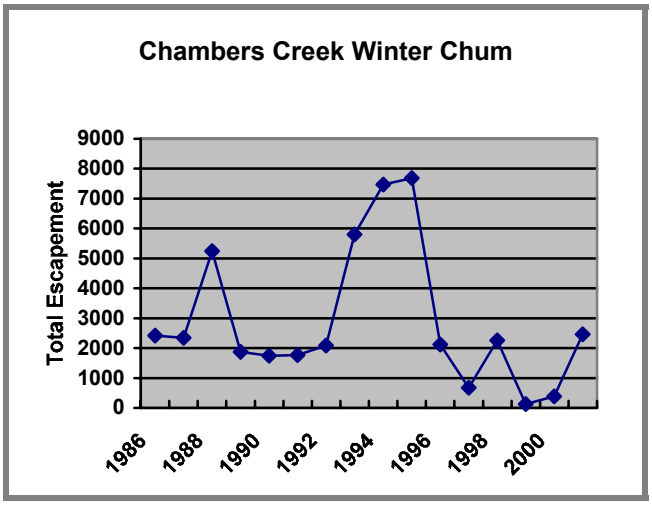
Stock Status

1992 Status	2002 Status
Healthy	Healthy

Stock Status Rating Data

Usefulness for Rating Stock Status: Very Good

Year	Total Escapement
1986	2,420
1987	2,348
1988	5,248
1989	1,878
1990	1,744
1991	1,767
1992	2,089
1993	5,802
1994	7,471
1995	7,679
1996	2,122
1997	677
1998	2,260
1999	130
2000	380
2001	2,464



Data are total escapement based on trap counts at the mouth of Chambers Creek.

Stock status is rated **Healthy** in 2002. This winter chum stock experienced strong escapements from 1980 through 1996, primarily because of a hatchery supplementation program. The 1997 and 2000 escapements of Chambers Creek winter chum were very low, 677 and 380 spawners respectively, most likely because of the cessation of hatchery releases. This decline was considered as possible evidence of a change to depressed status based on the short-term severe decline stock rating criteria. However, examination of past escapement demonstrates two previous periods with similar levels of escapement on two consecutive years (1969-1970 and 1978-1979). Based on the prior low years, the 1999-2000 escapements likely represent the bottom of the normal low end of the range for this stock.

Stock Definition

Chambers Creek winter chum were identified as a stock based on their distinct spawning distribution, spawning timing, and genetic composition.

Spawning Distribution: Most spawning takes place in Chambers Creek and tributaries such as Leach and Flett creeks.

Spawning Timing: Spawning generally occurs from January through February.

SOUTH SOUND – CHAMBERS CREEK WINTER CHUM

GENETIC ANALYSIS: Allozyme analysis has shown Chamber Creek winter chum to be genetically different from all other Washington chum stocks examined. They are most similar to the Nisqually winter chum stock (Phelps et al. 1995).

STOCK ORIGIN

This is a **native** stock with **wild** production.

SOUTH SOUND– CHAMBERS CREEK COHO

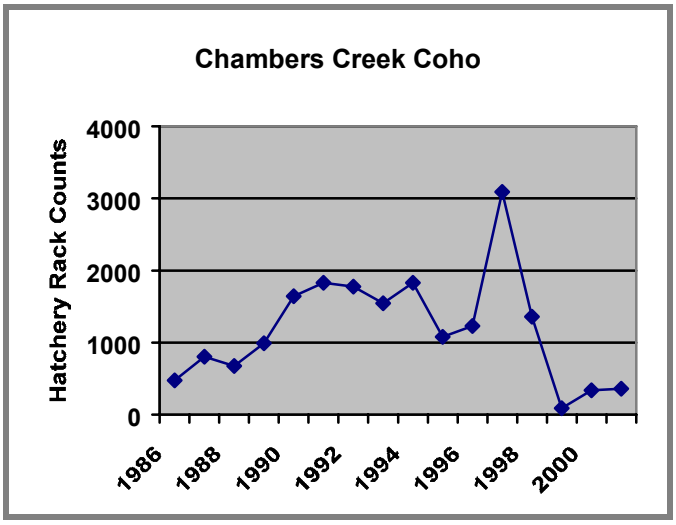
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Depressed

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Good

YEAR	HATCHERY RACK COUNTS
1986	473
1987	804
1988	677
1989	991
1990	1,641
1991	1,828
1992	1,775
1993	1,544
1994	1,830
1995	1,081
1996	1,230
1997	3,089
1998	1,359
1999	90
2000	338
2001	360



Data are adult coho rack passage counts at the Chambers Creek Hatchery rack.

Stock status is rated **Depressed** in 2002, based on the **short-term severe decline** in escapement in 1999 through 2001. A marked drop in escapements and run sizes occurred in this and all other South Sound coho stocks in mid- to late 1990s, largely the outcome of a precipitous plunge in South Sound coho marine survival rates that started with the late 1980s brood years. Large numbers of hatchery-origin strays, predominantly from the Lake Sequalitchew and Fox Island Net Pen programs, used to contribute to the Chambers Creek natural coho escapement. Since the elimination of the Lake Sequalitchew program and the closure of the Fox Island facility, total coho returns to Chambers Creek have decreased dramatically. This stock does not meet the strict definition of a short-term severe decline in escapement because escapement in only one year, 1999, of the most recent five years is at or below the previous low of 285 in 1985. However, given the low fishery exploitation rates in this time period, total stock productivity was probably among the worst for this stock and a Depressed rating is warranted.

SOUTH SOUND– CHAMBERS CREEK COHO

Stock Definition

Chambers Creek coho were identified as stock due to their distinct spawning distribution.

Spawning Distribution: Spawning takes place throughout the Chambers Creek drainage.

Spawning Timing: Spawning timing is unknown.

Genetic Analysis: No genetic analysis has been done on Chambers Creek coho.

Stock Origin

This is a **mixed** stock with **composite** production. Various non-native hatchery-origin coho have been released into the Chambers Creek basin, and adult strays from the Fox Island net pen program also contributed to the Chambers Creek coho spawning population. The elimination of the Lake Sequalitchew program and the closure of the Fox Island net pens will probably reduce escapement of strays into Chambers Creek.

SOUTH SOUND – DEEP SOUTH SOUND TRIBS COHO

DRAFT

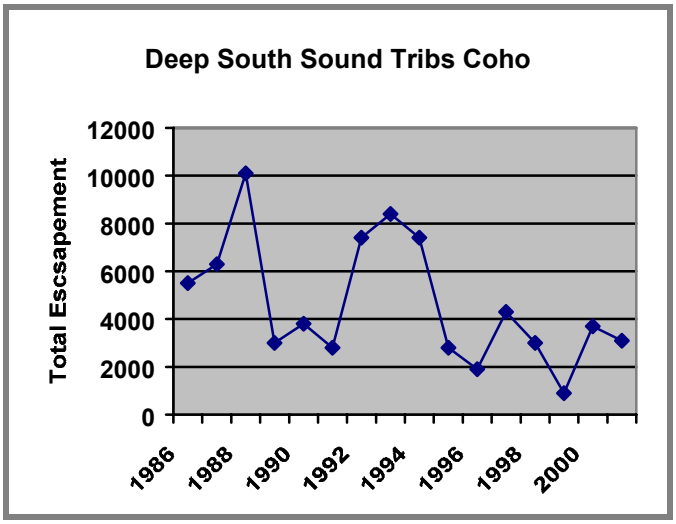
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	TOTAL ESCAPEMENT
1986	5,500
1987	6,300
1988	10,100
1989	3,000
1990	3,800
1991	2,800
1992	7,400
1993	8,400
1994	7,400
1995	2,800
1996	1,900
1997	4,300
1998	3,000
1999	900
2000	3,700
2001	3,100



Data are total escapement estimates based on serial live fish counts in index areas throughout Deep South Sound.

A short-term decline in escapements and run sizes occurred in this and all other South Sound coho stocks in mid to late 1990's, largely the outcome of a precipitous plunge in South Sound coho marine survival rates. Escapements are still above historical lows, so the stock is rated **Healthy** in 2002. A Depressed rating may be warranted if an upward trend is not observed in the near future.

STOCK DEFINITION

Deep South Sound Tribs coho were identified as a stock based on the geographic proximity and common estuary of the numerous small to medium-sized coho-producing tributaries in deep South Sound and on the common origin (Soos Creek (Green River) and Minter Creek hatcheries) of the hatchery coho that were stocked extensively into streams in this region. These hatchery introductions are expected to have resulted in at least some genetic modification and/or homogenization of the original natural coho stock(s)in deep South Sound.

SPAWNING DISTRIBUTION: Spawning takes place in all suitable and accessible streams along the southern edge of the Kitsap Peninsula from the western shore of the Tacoma Narrows, west along the Hale Passage

shoreline, the east and west shores of Carr Inlet and Case Inlet and the streams in southernmost inlets of Puget Sound including Hammersley, Skookum, Totten, Eld, Budd, and Henderson, then along Nisqually Reach up to, but not including McAllister Creek. Only coho spawning in Chambers Creek, McAllister Creek, the Nisqually River and the Deschutes River are not included in the Deep South Sound Tribs stock.

SPAWNING TIMING: Spawning generally occurs from late October to mid-December.

GENETIC ANALYSIS: No genetic analysis has been done on Deep South Sound Tribs coho.

STOCK ORIGIN

This is a **mixed** stock with **composite** production. Non-native coho are not regularly stocked into Deep South Sound tributaries any longer, however two decades of fry outplants have contributed to the mixed nature of this stock. Many hatchery strays are still observed during natural spawning surveys.

SOUTH SOUND – DESCHUTES COHO

STOCK STATUS

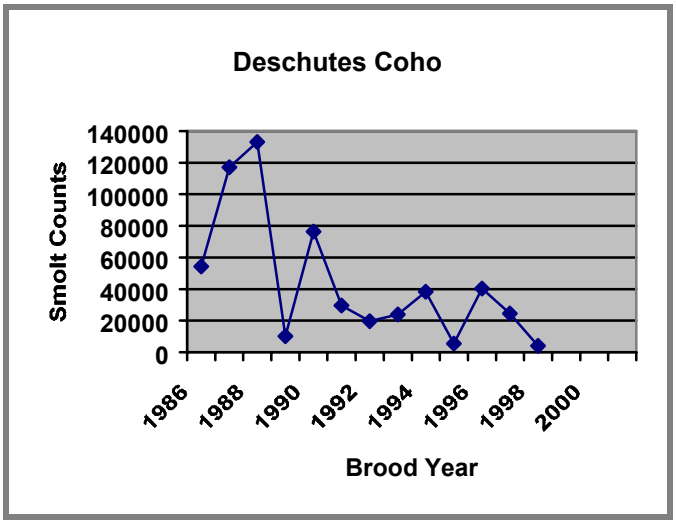
1992 STATUS	2002 STATUS
Healthy	Critical

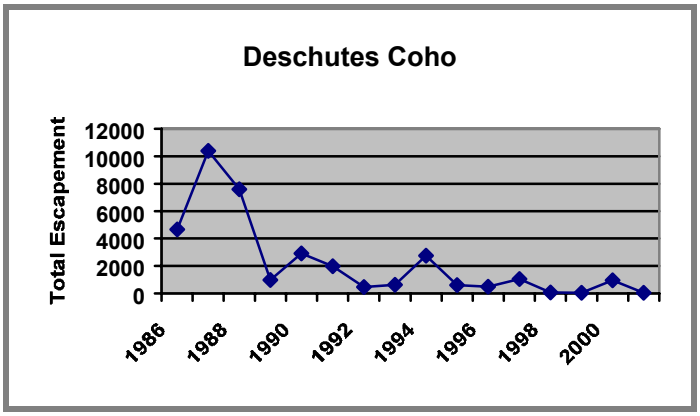
STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Very Good

BROOD YEAR	TOTAL SMOLTS	TOTAL ESCAPEMENT
1986	54,397	4,651
1987	117,087	10,393
1988	133,066	7,592
1989	10,101	974
1990	76,438	2,916
1991	29,652	1,972
1992	19,686	461
1993	23,912	640
1994	38,197	2,757
1995	5,541	596
1996	40,412	491
1997	24,422	1,052
1998	4,000	68
1999	20,544*	40
2000	4,144*	954
2001	892*	54

*Preliminary estimate





Data are smolt counts at the Tumwater Falls smolt trap and total escapements based on counts of wild adults at the Tumwater Falls adult trap.

A **severe short-term decline** in escapement in 1995 and 1998, **chronically low** escapements and a **long-term negative trend** in smolt abundance have been observed. Stock status is rated **Critical** in 2002. Not only has this stock been subject to the precipitous plunge in marine survival rates seen in all South Sound coho stocks, it has also been affected by severe perturbations in the upper Deschutes watershed.

SOUTH SOUND – DESCHUTES COHO

Stock Definition

Deschutes coho were identified as stock due to their distinct spawning distribution.

Spawning Distribution: Spawning takes place throughout the Deschutes River watershed and in independent tributaries to Capitol Lake including Percival Creek and Black Lake Ditch.

Spawning Timing: Spawning generally occurs from late October to early January.

Genetic Analysis: No genetic analysis has been done on Deschutes coho.

Stock Origin

This is a **non-native** stock with **wild** production. No coho spawned in the Deschutes River prior to construction of a fish ladder at Tumwater Falls in 1954. The introduced coho are largely Soos Creek Hatchery (Green River) in origin.

SOUTH SOUND – EAST KITSAP COHO

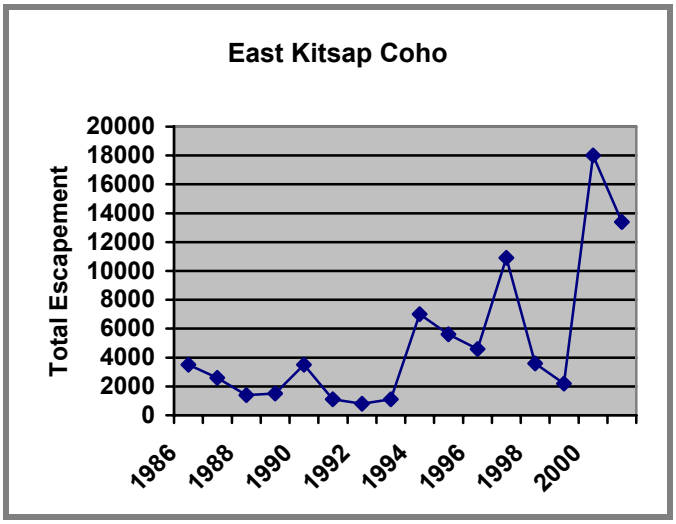
STOCK STATUS

1992 STATUS	2002 STATUS
Healthy	Healthy

STOCK STATUS RATING DATA

USEFULNESS FOR RATING STOCK STATUS: Fair

YEAR	TOTAL ESCAPEMENT
1986	3,500
1987	2,600
1988	1,400
1989	1,500
1990	3,500
1991	1,100
1992	800
1993	1,100
1994	7,000
1995	5,600
1996	4,600
1997	10,900
1998	3,600
1999	2,200
2000	18,000
2001	13,400



Data are total escapement estimates based on cumulative fish-days values in survey index areas.

Escapements have been trending up since 1994, and the 2000 escapement estimate was the highest on record, so the stock is again rated **Healthy** in 2002.

STOCK DEFINITION

East Kitsap coho were identified as stock due to their distinct spawning distribution and common history of hatchery releases (mainly from Minter Creek Hatchery).

SPAWNING DISTRIBUTION: Spawning takes place in all suitable and accessible streams along the eastern shore of the Kitsap Peninsula from about Point No Point south to just north of the Tacoma Narrows Bridge, including Judd Creek and Cedarhurst Creek (15.0159) on Vashon Island.

SPAWNING TIMING: Spawning generally occurs from late October to late December.

GENETIC ANALYSIS: No genetic analysis has been done on East Kitsap coho.

SOUTH SOUND – EAST KITSAP COHO

Stock Origin

This is a **mixed** stock with **composite** production. Various non-native hatchery-origin coho have been released into Deep South Sound streams. Additionally, adipose fin-clipped fish and coded-wire tags recovered from carcasses during spawning ground surveys in this region indicate a high level of adult straying into the natural spawning population from regional hatchery programs.

SOUTH SOUND – DESCHUTES WINTER STEELHEAD

Stock Status

1992 Status	2002 Status
Healthy	**Not Rated**

Steelhead historically did not have access to the Deschutes River basin until a fish ladder was installed at Tumwater Falls in 1954. Chambers Creek Hatchery winter steelhead have regularly been released into the Deschutes River to support fishery opportunities. There has never been any intent to establish a wild, naturally spawning winter steelhead population through these releases. In fact, this hatchery stock has been selected for fishery enhancement because of its early return and spawning timing, which differentiate it from native winter steelhead stocks. These characteristics are not well suited to natural spawning conditions in the Deschutes, and these fish are not expected to exhibit significant natural production. Therefore, Deschutes winter steelhead are **Not Rated** in 2002.

Stock Definition

We do not regard winter steelhead spawning in the Deschutes as being a distinct stock in the same sense that the term is used elsewhere in this inventory.

Spawning Distribution: Precise spawning locations are not known, but spawning is presumed to take place throughout the Deschutes basin and in Percival Creek.

Spawning Timing: Spawning generally occurs from early February through mid-March.

Genetic Analysis: No genetic analysis has been done on Deschutes winter steelhead.

Stock Origin

Winter steelhead spawning in the Deschutes are of Chambers Creek Hatchery origin.

SOUTH SOUND – ELD INLET WINTER STEELHEAD

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Eld Inlet winter steelhead, so their status in 2002 continues to be **Unknown**.

Stock Definition

Eld Inlet winter steelhead were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Most spawning takes place in Eld Inlet tributaries including McLane and Perry creeks.

Spawning Timing: Spawning timing is unknown.

Genetic Analysis: No genetic analysis has been done on Eld Inlet winter steelhead.

Stock Origin

This stock is thought to be **native** with **wild** production.

SOUTH SOUND – TOTTEN INLET WINTER STEELHEAD

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Totten Inlet winter steelhead, so their status in 2002 continues to be **Unknown**.

Stock Definition

Totten Inlet winter steelhead were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Most spawning takes place in Totten Inlet tributaries such as Kennedy, Skookum and Schneider creeks.

Spawning Timing: Spawning timing is unknown.

Genetic Analysis: No genetic analysis has been done on Totten Inlet winter steelhead.

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – HAMMERSLEY INLET WINTER STEELHEAD

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Hammersley Inlet winter steel, so their status in 2002 continues to be **Unknown**.

Stock Definition

Hammersley Inlet winter steelhead were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Spawning takes place in Hammersley Inlet tributaries including Mill, Goldsborough, Johns, Cranberry, Deer, Spring, Malaney, Uncle John and Campbell creeks.

Spawning Timing: Spawning timing is unknown.

Genetic Analysis: No genetic analysis has been done on Hammersley Inlet winter steelhead.

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND – CASE/CARR INLETS WINTER STEELHEAD

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no abundance trend data for Case/Carr Inlets winter steelhead, so their status continues to be **Unknown** in 2002.

Stock Definition

Case/Carr Inlets winter steelhead were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Spawning takes place in Case Inlet tributaries including Sherwood, Coulter, Dutcher, Artondale and Jones creeks and in Carr Inlet tributaries including Minter, Burley, Purdy, McCormick and Lackey creeks.

Spawning Timing: Spawning timing is unknown.

Genetic Analysis: No genetic analysis has been done on Case/Carr Inlets winter steelhead.

Stock Origin

This is a **native** stock with **wild** production.

SOUTH SOUND– EAST KITSAP WINTER STEELHEAD

Stock Status

1992 Status	2002 Status
Unknown	**Unknown**

Stock Status Rating Data

There are no adequate abundance trend data for East Kitsap winter steelhead, so stock status continues to be **Unknown** in 2002. Escapement is not monitored, and sport harvest data have not been useful for rating status since wild steelhead release was implemented in South Sound sport fisheries in 1993.

Stock Definition

East Kitsap winter steelhead were identified as a stock based on their distinct spawning distribution.

Spawning Distribution: Spawning takes place in Ollala, Crescent, Curley, Gorst, Blackjack, Ross, Barker, Clear, Chico, Scandia, Dogfish and Grovers creeks on the east side of the Kitsap Peninsula.

Spawning Timing: Spawning generally occurs from February through mid-April.

Genetic Analysis: No genetic analysis has been done on East Kitsap winter steelhead

Stock Origin

This is a **native** stock with **wild** production.